EUROPE'S EVOLVING DETERRENCE DISCOURSE

EDITED BY AMELIA MORGAN AND ANNA PÉCZELI

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Contents

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Heather Williams is currently a Stanton nuclear security fellow in the Security Studies Program at the Massachusetts Institute of Technology (MIT). She is also a lecturer in the Defence Studies Department and Centre for Science and Security Studies (CSSS) at King's College London. From 2018 to 2019, Dr. Williams served as a specialist advisor to the House of Lords International Relations Committee inquiry into the Nuclear Non-Proliferation Treaty and disarmament. She was previously a research fellow on nuclear weapons policy at Chatham House and led research on the Nuclear Non-Proliferation Treaty and the Humanitarian Impacts of Nuclear Weapons Initiative. Dr. Williams completed her Ph.D. in the Department of War Studies at King's College London. She has a B.A. in international relations and Russian studies from Boston University, and an M.A. in security policy studies from The George Washington University.

Preface
Brad Roberts

Over the last decade, a deteriorating security environment has brought into sharp focus the atrophy of strategic thought that occurred after the Cold War. At a time of intensifying major power rivalry, renewed urgency about the effectiveness of deterrence and the reliability of strategic stability, and mounting threats by nuclear-armed and -arming "rogue states," the need for new intellectual capital has become more pressing. But the U.S. analytical community shed a great deal of capability and capacity in the 1990s and after the 9/11 attacks was long focused on other problems. In recent years, the United States has slowly begun to rebuild institutional capacity and to reinvest in the development of the necessary human capital and analytical tools.

One symptom of past atrophy was the near-complete collapse of transatlantic dialogue on these matters. One indicator of the nascent renewal is the reemergence of transatlantic collaboration, especially among early career professionals. In recent years it has also become clear that European institutions too are beginning to rebuild capacity and reinvest in human capital.

This small volume is the result of a collective effort by four institutions to take stock of the state of strategic thought in Europe as it relates to deterrence and to advance transatlantic dialogue on deterrence. As a co-organizer of this process, CGSR is pleased to produce this edited collection of papers on behalf of the group. I am especially grateful to Amelia Morgan and Anna Péczeli for their role as coeditors. Please note that the views expressed here are the personal views of the authors and should not be attributed to the Laboratory, its sponsors, or any of the institutions with which the authors are or have been affiliated. Please also note that the Laboratory assumes no responsibility for the validity of the information used by the authors, who have drawn on information in common usage in Europe to inform their thinking.

Introduction

Amelia Morgan and Heather Williams

For decades, nuclear deterrence has been at the heart of the transatlantic relationship between the United States and Europe. It underpins European security, and the North Atlantic Treaty Organization (NATO) continuously commits to remaining a nuclear alliance as long as nuclear weapons exist, most recently in the 2019 London Declaration issued by Heads of State and Government.[1] But the relationship is also changing. In his February 2020 speech about the country's defense and deterrence strategy, French President Emmanuel Macron called for a "rebalancing" in the transatlantic relationship for Europeans to be "credible and efficient partners."[2] And yet, with a few important exceptions, transatlantic dialogue on nuclear issues largely declined with the end of the Cold War, particularly among nongovernmental experts, and has only started to be revived in recent years. Rebuilding deterrence dialogue in response to a shifting strategic landscape is one important step in strengthening not only the transatlantic partnership, but also European security.

A renewed and concerted effort by both Americans and Europeans to rebuild a deterrence dialogue must address several questions. How have transatlantic perspectives on deterrence evolved in light of new strategic and geopolitical realities? What questions and thinking should guide contemporary approaches to the theory and practice of deterrence? And how can a transatlantic community contribute to deterrence thinking and a more balanced deterrence debate?

These questions lay at the heart of a collaborative partnership between King's College London (KCL), the Center for Global Security Research (CGSR) at Lawrence Livermore National Laboratory, and Science Applications International Corporation (SAIC). In June 2020, with generous sponsorship from the U.S. National Nuclear Security Administration (NNSA), the project organizers convened a virtual workshop including more than 30 American and European deterrence experts to assess existing transatlantic thinking on deterrence and to identify areas where a more robust transatlantic dialogue might contribute to raising the "deterrence IQ" on both sides of the Atlantic. At their core, these efforts aim to improve awareness of nuclear deterrence issues in Europe, advance contemporary thinking on deterrence, and cultivate a next-generation transatlantic community of experts who can help lay the foundation for future deterrence policy.

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1 North Atlantic Treaty Organization, *London Declaration* (December 4, 2019). https://www.nato.int/cps/en/natohq/official_texts_171584.htm. Accessed September 9, 2020.

2 Emmanuel Macron, "Speech of the President of the Republic on the Defense and Deterrence Strategy" (February 7, 2020). https://www.elysee.fr/en/emmanuel-macron/2020/02/07/speech-of-the-president-of-the-republic-on-the-defense-and-deterrence-strategy. Accessed September 9, 2020.

This collection captures several evolving deterrence themes in Europe and seeks to inject new momentum into that dialogue. Such efforts are particularly timely as European actors confront an adventurist Russia, rising China, and new technologies that will impact nuclear deterrence. The implications of this dialogue will not only affect U.S.–Europe relations and deterrence, but also nuclear institutions such as the Nuclear Non-Proliferation Treaty (NPT), as it prepares to convene its quinquennial Review Conference (RevCon) in 2021.

Deterrence Challenges, Old and New

Europeans are facing at least two deterrence challenges. The first is relatively familiar: how to maintain a strong deterrent, particularly in response to Russian adventurism, while also pursuing arms control? The second challenge is more novel and associated with the impact of emerging technologies, such as cyber and artificial intelligence, on nuclear deterrence and European security.

Balancing deterrence and arms control has been a challenge for NATO and European states since the dawn of the nuclear age. Many papers in this volume harken back to the 1967 Harmel Report, which outlined the "two-track approach" whereby NATO would maintain a strong nuclear deterrent while also pursuing dialogue with the Soviet Union.[3] This delicate balance has evolved with geopolitics to include unique challenges in the current security environment. Russian violation of arms control agreements has tipped the balance heavily towards a strong deterrent as Moscow can no longer be relied upon as a credible partner in arms control. The breakdown of arms control and numerous other forums for dialogue has exacerbated a climate of competition with new arms racing, particularly as Russia is also increasingly adventurist, such as with the deployment of dual-capable missile systems in Kaliningrad.

But the deterrence–arms control balance has also been impacted by shifts in the global nuclear order. Specifically, the 2017 Treaty on the Prohibition of Nuclear Weapons (TPNW) forced many NATO member states to explain their commitment to nuclear deterrence amidst pressure from treaty members, activist organizations, and pro-disarmament domestic groups. While arms control and disarmament are distinct, they are often touted simultaneously in European dialogues. Indeed, many factors impacting the deterrence–arms control balance have shifted from the time of the Harmel Report. The result has been a reconfirmation of the central role of nuclear weapons in European security and a commitment for NATO to remain a nuclear alliance so long as nuclear weapons exist.

In addition to the relatively familiar challenge of balancing deterrence and arms control, deterrence in the transatlantic context also faces new challenges from emerging technologies. James Acton has highlighted the risks of cyberattacks on

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3 Rose Gottemoeller, "NATO Is Not Brain Dead," *Foreign Affairs* (December 19, 2019). https://www.foreignaffairs.com/articles/united-states/2019-12-19/nato-not-brain-dead. Accessed September 9, 2020.

conventional command and control (C2) during a European conflict, for example, which could inadvertently take out nuclear systems in an "entanglement" scenario.[4] Many European states are also developing new technologies that could impact strategic stability, such as French plans to design lasers to protect its satellites.[5] While the majority of attention on emerging technologies has been pessimistic and focused on their risks of undermining nuclear deterrence, there are also scenarios whereby they could strengthen deterrence and transatlantic relations. Improvements in artificial intelligence might, in fact, increase transparency and predictability of strategic postures. This is but one of many topics requiring further discussion among experts on both sides of the Atlantic, particularly with regards to what it would mean for NATO.

At the outset it is important to state that Europe is not a monolith, particularly when it comes to nuclear issues. While some NATO members have a strong antinuclear domestic audience, others rarely engage publicly on nuclear issues because of a deep reliance on extended nuclear deterrence for their security. Understanding different European perspectives on deterrence and the dynamics underpinning them is crucial for anticipating their effects, particularly as they relate to the transatlantic relationship, NATO, and the changing threat environment.

These trends informed the lines of inquiry for the June 2020 workshop: How is thinking on deterrence in Europe evolving to address contemporary challenges? How do different local, regional, and national governments view nuclear deterrence and the European nuclear debate? How can the transatlantic alliance apply the spirit of the Harmel Report in the current security environment? And how might emerging technologies impact deterrence within the transatlantic alliance? Many of the papers in this collection were written to inform these questions and generate the intellectual capital Brad Roberts calls for in the preface.[6] We highlight several notable issues.

An Evolving Deterrence Dialogue

First, how has thinking on deterrence in Europe evolved in recent years, both in theory and practice? As Michael Rühle explains (Chapter 1), there is a need for greater conceptual clarity on deterrence among European and transatlantic communities—a theme that runs through this volume. While there has been a renewed interest in the concept of deterrence in national strategies and discourse, efforts to apply and refine existing deterrence paradigms to contemporary challenges have led to conceptual confusion. In some cases, this has even prompted disagreement about the scope, objectives, and applicability of deterrence. This theme is particularly relevant from a practical perspective, both in terms of maintaining NATO

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4 James M. Acton, "Entanglement through Escalation: How the Vulnerability of Command-and-Control Systems Raises the Risks of Inadvertent Nuclear War," *International Security* 43, no. 1 (Summer 2018), p56–99.

5 Lauren Chadwick, "'May the force be with vous': France unveils space weapons plan," EuroNews (July 26, 2019). https://www.euronews.com/2019/07/26/may-the-force-be-with-vous-france-unveils-space-weapons-plan. Accessed September 9, 2020.

6 One of the presentations from the workshop has been published elsewhere. See Gregory F. Giles, "Deterrence and the NPT: Compatible and Reinforcing," *Survival* (August–September 2020), p135–156.

unity and a credible nuclear deterrent. It is also important conceptually to facilitate deeper engagement and understanding, and to better inform deterrence debates on the importance of nuclear weapons in NATO's deterrence posture.

Second, European governments face asymmetric domestic pressure to engage in critical deterrence questions, as evidenced by three excellent reviews of recent parliamentary debates in Germany (Chapter 2), the Netherlands (Chapter 3), and France (Chapter 4). Pia Fuhrhop and Michal Onderco highlight recent domestic interest in nuclear deterrence in Berlin and the Hague, respectively; in contrast, the topic receives relatively little attention in French domestic politics, as demonstrated by Emmanuelle Maitre. It is within these chapters that European diversity comes to the fore.

Third, how can states continue to apply the underlying principles of the Harmel Report in balancing deterrence and détente? Jessica Cox and Joseph Dobbs (Chapter 5) emphasize that for NATO, these are not "contradictory pursuits" but "core and complementary" elements of the Alliance's strategic approach that has "ensured the security of the Alliance over many decades." Nonetheless, as Anna Péczeli (Chapter 6) and Łukasz Kulesa (Chapter 7) demonstrate, this approach has come under strain. Heightened geopolitical tensions, deteriorating prospects for arms control, institutional infighting within the NPT, increasing salience of nuclear weapons in national doctrines and strategies, and new nuclear capabilities together threaten the fragile—and oft-contested—balance between these concepts within Europe. While many experts are watching and waiting to see what the United States does in these areas, Europeans also have a role to play in forging their own balance between deterrence and arms control.

Finally, the strategic implications of emerging technologies are both contested and uncertain. While the potential challenges are well-documented, Andrea Gilli and Mauro Gilli (Chapter 8) and Laura Siddi (Chapter 9) encourage caution in drawing overly pessimistic conclusions about their effects. How these technologies will impact deterrence relationships will ultimately depend on the ways they are leveraged across domains, state incentives to incorporate them, and perceptions about their utility. Just as we should not trivialize the risks, nor should we overstate their potential.

Reviving the Transatlantic Deterrence Dialogue

While there are nuanced differences in European approaches to various nuclear issues, the transatlantic alliance has remained steadfast in many ways. NATO remains a nuclear alliance; no NATO members have joined the TPNW, nor are they likely to do so;[7] and all NATO members supported American withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty in the face of Russian cheating. There may be diverse experiences in the details of states' nuclear experiences, but when it comes to fundamentals, the transatlantic alliance shares deep first principles about the

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7 North Atlantic Treaty Organization, "North Atlantic Council Statement on the Treaty on the Prohibition of Nuclear Weapons," press release (September 20, 2017). https://www.nato.int/cps/ua/natohq/news_146954.htm. Accessed September 9, 2020.

importance of nuclear deterrence in European security. This shared sense of purpose should be directed to facing new deterrence challenges. Peter Watkins (Chapter 10) highlights questions around "modern deterrence," for example, particularly how to respond to subthreshold activities. Watkins' practical insights—particularly as they relate to transatlantic collaboration—help to ground many of the theoretical ideas explored elsewhere in this volume and demonstrate the importance of involving practitioners in deterrence dialogues.

As this collection demonstrates, there is indeed an evolving deterrence dialogue within Europe. It is particularly focused on balancing cooperation with Russia, strengthening NATO unity, and maintaining a robust and flexible deterrent, while also upholding commitments to nuclear disarmament as captured under Article VI of the NPT. This balance is increasingly challenging in a rapidly changing geopolitical and technological environment. Hopefully this discussion is just the start of collaborative transatlantic efforts to address them.

The (Incomplete) Return of Deterrence

Michael Rühle[8]

Introduction

Has deterrence thinking in Europe changed in recent years? Has it become more sophisticated or has it atrophied? This chapter argues that mainstream Western deterrence thinking has done all of the above. On the one hand, the concept of deterrence has been resurrected after two decades of neglect; on the other hand, the concept continues to be insufficiently understood and applied. If deterrence is to have its rightful place in national or alliance security strategies, a much deeper understanding is required about the concept's purpose as well as its limitations.

The Appeal of Deterrence

The concept of deterrence is congenial to Western democracies. As Lawrence Freedman put it, deterrence strategies "appeal to governments because they can be presented as being defensive but not weak, and firm but not reckless."[9] Deterrence implies that one can keep unwelcome developments at bay by remaining essentially passive: The mere show of force can substitute for military action. Deterrence is essentially a status quo concept. It does not rule out political, social, or economic change, nor does it rule out competition between states. However, it seeks to rule out the use of force to achieve political aims, and to ensure that war—at least major war—is no longer an instrument of policy. To be sure, the concept has its share of flaws, be they in terms of credibility, plausibility, or ethics. However, to paraphrase Freedman again, while deterrence may not have worked well in theory, it worked quite well in practice.

Today, however, the concept of deterrence is under strain. A more competitive, multi-stakeholder environment as well as the rapid technological progress in many areas, including artificial intelligence, autonomy, and big data, make deterrence more complex. Yet, according to some analysts, these developments also provide the deterring side with a broader array of deterrence tools. Some have even argued that the focus on nuclear deterrence that shaped the debate over the past 70 years

9 Lawrence Freedman, "The Limits of Deterrence," in: Becca Wasser et. al. (Eds.), *Comprehensive Deterrence Forum*, RAND (CF345), Santa Monica (2018), p25. https://www.rand.org/content/dam/rand/pubs/conf_proceedings/CF300/CF345/RAND_CF345.pdf. Accessed January 14, 2021.

was a (U.S.-centric) aberration, and that the time has come to again broaden our understanding of deterrence far beyond notions of (nuclear) military reprisals.[10]

This broadening of the concept of deterrence may be intellectually fascinating, yet it confuses more than it enlightens. Applying the term "deterrence" to each and every challenge is highly problematic; it suggests—wrongly—that a clever combination of coercive tools can somehow keep unwelcome hostile actions at bay. Employing the term in the context of "new," predominantly non-kinetic threats sounds comforting, as it implies that one can preserve the status quo against one's competitors largely by adapting and refining holistic strategies and postures, as well as by clever signaling. However, the real-life record shows that many of these new threats simply cannot be deterred, which makes "deterrence" an ill-suited paradigm for coping with these challenges.[11]

Worse, insisting that deterrence can be applied to a wide spectrum of threats contributes to the confusion that marks the current renaissance of that concept. As a brief look at the debates on various dimensions of deterrence—conventional, nuclear, cross-domain, and hybrid—shows, the application of that concept varies considerably. While these deterrence dimensions are not entirely distinct in practice, looking at them individually helps to identify the limits of the concept.

Conventional Deterrence

As far as conventional deterrence is concerned, the discussion in the West revolves around the adequacy of NATO's defense posture along its Eastern flank. With NATO enlargement having pushed the Alliance's borders to those of Russia, some observers now fear that a quick Russian incursion into a Baltic state could confront NATO with a fait accompli that would create a massive dilemma: either to fight and risk wider escalation, or to stay passive and thereby spell the end of NATO. Geography in this easternmost part of NATO favors Russia. And given certain political and military constraints (such as the allies' continued adherence to the NATO–Russia Founding Act), NATO—despite being militarily superior overall—cannot build up a massive, Cold War-style defense posture. Instead, NATO has to bank on a deterrence strategy through a thin, multinational forward presence that would act as a trip wire until the arrival of NATO reinforcements.

The multinational character of NATO's enhanced Forward Presence (eFP), the strong role of the United States within it, and NATO's elaborate exercise policy are meant to signal to Russia that it cannot hope to regionalize a conflict. Moscow must assume

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10 James Sullivan, "Cross-domain deterrence: strategy in an era of complexity," book review, *International Affairs* 95, no. 4 (July 2019), p938. https://academic.oup.com/ia/article-abstract/95/4/937/5524965. Accessed February 11, 2021.

11 The widely lamented increase in the number of cyber- and other non-kinetic attacks suggests that—at least until now—deterrence has been largely irrelevant in this context. Exercises on hybrid warfare seem to reinforce this observation: they suggest that a determined aggressor will not be deterred by non-kinetic means. See also the Pentagon's Cyber Strategy, which mentions deterrence, yet clearly favors other means, such as "defending forward" as mentioned in the U.S. Department of Defense Cyber Strategy 2018 Summary. https://media.defense.gov/2018/Sep/18/2002041658/-1/-1/1/CYBER_STRATEGY_SUMMARY_FINAL.PDF. Accessed January 14, 2021.

that any military conflagration would lead to a war with NATO proper. Given Russia's regional superiority, however, including its growing Anti-Access/Area Denial (A2AD) capabilities as well as NATO's challenge of getting sufficient reinforcements into the theater on time, some believe a revisionist Russia nevertheless could be tempted to probe NATO's defenses, thereby calling NATO's bluff.[12] In short, the conventional deterrence debate in NATO is burdened by recurring doubts about the credibility of a defense concept that must be sufficiently robust to assure NATO's most exposed allies while also reassuring Russia that NATO does not seek to return to the old Cold War posture.

Nuclear Deterrence

The debate on nuclear deterrence is characterized by two opposing tendencies. As far as orthodox security policy is concerned, one can observe a renaissance of nuclear deterrence as an important element of Western defense. As with the challenge of conventional deterrence, this renaissance also comes with a degree of pessimism. NATO's conventional weakness on its Eastern flank, new Russian post-INF nuclear missile deployments, and the hesitation of some allies to engage more fully in this domain beyond token communiqué statements have raised doubts as to the concept's credibility in light of a more assertive Russia. While Russia is said to have an integrated approach towards conventional and nuclear weapons, NATO's overall defense posture lacks any integration of the nuclear mission into its overall defense posture, which some see as a serious liability.[13] However, just as NATO and the West seek to reaffirm nuclear deterrence as a major pillar of security, a countervailing trend seeks to demonstrate the irrelevance of nuclear weapons and considers nuclear deterrence a myth.[14] These critics focus on the difficulty of proving the concept's effectiveness, the ethical and moral tension between the mere threat of military reprisals and their actual implementation, and the risk that it locks its protagonists into a permanent adversarial relationship. Based on such arguments, an international non-governmental organization (NGO)-led effort seeks to delegitimize nuclear weapons by outlawing them. The Treaty on the Prohibition of Nuclear Weapons (TPNW)

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12 Sven Sakkov, *Why the Baltics matter. Defending NATO's North-Eastern border*, NATO Defense College Policy Brief No. 13 (June 2019). http://www.ndc.nato.int/download/downloads.php?icode=597. Accessed January 14, 2021. Ben Hodges, Janusz Bugajski, Peter B. Doran, *Strengthening NATO's Eastern Flank: A Strategy for Baltic-Black Sea Coherence*, Center for European Policy Studies (November 2019). https://1f3d3593-8810-425c-bc7f-8988c808b72b.filesusr.com/ugd/644196_8754c3428d9d4da0adb29bef6df2f5b4. pdf. Accessed January 14, 2021. Matus Halas, "Proving a negative: why deterrence does not work in the Baltics," *European Security* 28, no. 4 (2019), p431–448.

13 Dave Johnson, *Nuclear Weapons in Russia's approach to conflict,* Recherches & Documents No.6, Fondation pour la Recherche Stratégique, (November 2016). https://www.frstrategie.org/sites/default/files/documents/publications/recherches-et-documents/2016/201606.pdf. Accessed January 14, 2021. Matthew Kroenig, *A Strategy for Deterring Russian Nuclear De-Escalation Strikes*, The Atlantic Council (April 2018). https://www.atlanticcouncil.org/wp-content/uploads/2018/04/Nuclear_Strategy_WEB.pdf. Accessed January 14, 2021.

14 Ward Wilson, *Five Myths About Nuclear Weapons* (Boston, New York: Houghton Mifflin Harcourt, 2013). David P. Barash, "Nuclear deterrence is a myth. And a lethal one at that," *The Guardian* (January 14, 2018). https://www.theguardian.com/world/2018/jan/14/nuclear-deterrence-myth-lethal-david-barash. Accessed January 14, 2021.

fundamentally challenges the established tenets of nuclear governance. While it will not lead to nuclear abolition, it could seriously complicate the deterrence policies of, and nuclear cooperation between, Western nations.[15]

Cross-Domain Deterrence

Cross-domain deterrence seeks to counter threats in one arena by relying on capabilities in another area that may offer a stronger deterrence effect. This is not new, as interaction and competition between nations always include asymmetric means. Yet the rise of, inter alia, cyber and space capabilities has given the concept a new sense of urgency. As compelling as the logic of such an approach may be, however, it is difficult to implement as a strategy, given that the deterring side needs to coordinate a range of political, military, economic, and potentially other levers.[16]

Deterrence appears particularly difficult when the deterring side—in sharp contrast to classical military deterrence—does not want to show its own deterrence means (e.g., cyber capabilities).[17] Moreover, the question of proportionality (i.e., which response is appropriate to which kind of attack) will be hard to answer ex ante, which may diminish the deterrence value of articulating cross-domain threats. In short, the concept of cross-domain deterrence may be logically sound, as it signals to an aggressor that he can be hit in areas other than of his own choosing, but it implies an ability of the deterring side to manage complexity on a level that appears extremely challenging. Unsurprisingly, perhaps, the concept has not gained the traction some of its proponents may have hoped.

Hybrid Deterrence

The discussion on how to deter hybrid threats is closely linked to the debate on cross-domain deterrence, yet appears even more problematic.[18] Deterring non-kinetic, non-existential and sometimes non-attributable actions appears far more difficult than deterring an adversary's military action. In addition, unlike traditional military deterrence, where adversaries stay away from each other, hybrid entanglement is constantly ongoing, making deterrence even more difficult. Moreover, unlike in the

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15 For an elaborate critique of the Nuclear Ban Treaty, see Brad Roberts, *Ban the Bomb? Or Bomb the Ban?*, European Leadership Network Policy Brief (March 22, 2018). https://www.europeanleadershipnetwork.org/wp-content/uploads/2018/03/180322-Brad-Roberts-Ban-Treaty.pdf. Accessed January 14, 2021.

16 Moreover, some of the real-life cases subsumed under that concept (e.g., the Stuxnet attack against Iranian centrifuges) appear to be coercive actions rather than parts of a deterrence strategy. See Michael Nacht, Patricia Schuster, Eva C. Uribe, Cross-Domain Deterrence in American Foreign Policy, in: Erik Gartzke and Jon R. Lindsay, (Eds.) *Cross-Domain Deterrence: Strategy in an Era of Complexity* (Oxford: Oxford University Press, 2019), p27–49.

17 In some cases, ambiguity might contribute to deterrence, as it may complicate an opponent's risk calculus. However, it may also increase the likelihood of surprises, which could lead to unwelcome (escalatory) outcomes.

18 NATO's classified 2015 "Strategy on NATO's Role in Countering Hybrid Warfare" builds on the three pillars of prepare, deter, and defend, with "deter" clearly the weakest of the three; also see Michael Rühle, *In Defense of Deterrence,* National Institute for Public Policy, Issue Brief No. 457 (April 27, 2020). https://www.nipp.org/2020/04/27/ruhle-michael-in-defense-of-deterrence/. Accessed January 14, 2021.

military domain, where alliance considerations are paramount, hybrid activities have a large national (e.g., attribution) and civilian (e.g., resilience) dimension, which does not lend itself easily to collective responses. In a similar vein, the economic interdependence between the West and some of its competitors, such as China, makes deterrence by economic or financial punishment much harder to contemplate.[19]

Even attaching the label "modern" to the term "deterrence" cannot hide the fact that deterring hybrid activity stretches the concept of deterrence to the point of almost certain failure. The classic notion of deterrence—if it works, nothing bad happens—is simply not applicable to the hybrid domain, where many bad things happen all the time. As this "Fifth Wave" of deterrence research is still rather young, one can predict that some of its optimism will eventually wear off. For the time being, most studies on the subject of hybrid deterrence amount to little more than long lists of actions that governments could take or have taken (e.g., attribution, sanctions, new norms, specific rhetoric) in order to cope with hybrid aggression.[20] Since the deterrent effect of these actions remains unclear, however, this new wave of deterrence research risks promising much more than it can deliver.

A New Deterrence Alarmism

Ironically, it is this sweeping hybrid warfare discussion that has infected the mainstream deterrence debate, both with respect to the conventional and nuclear dimensions. The notion that seems to underlie the contemporary debate on hybrid threats and responses, namely that the West is now in a permanent state of low-level, non-kinetic war with mischievous adversaries, has introduced a new layer of alarmism into the deterrence discourse. Not only are the opponents that one seeks to deter already "at war" with the West, they appear even more ruthless and risk-prone than the adversaries the West faced in the Cold War. Moreover, since fake news campaigns, cyberattacks, or severed undersea cables could all serve to complicate a timely military response, NATO's conventional and nuclear deterrent is now said to be in an even more precarious state.

Dubious interpretations of events add further to this alarmism. Many analysts read Russia's use of hybrid means in undermining Ukraine in 2014 as a template for Russia's approach vis-à-vis NATO (i.e., hybrid actions are seen as a precursor to a military onslaught). Since this approach worked well in Ukraine, it is reasoned, it may

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19 Michael Rühle, *Deterring hybrid threats: the need for a more rational debate*, Policy Brief No. 15, NATO Defense College (July 9, 2019). http://www.ndc.nato.int/download/downloads.php?icode=600. Accessed January 14, 2021. For example, on several occasions the E.U. was unable to take a stronger united stance on China due to the economic and financial dependencies of some member states on that country. On Russia, too, tensions exist between a part of the European External Action Service that tracks Russian malign activities and the European Commission, which does not want to see its policy vis-à-vis Russia undermined by focusing too much on Russia's behavior in the "gray area."

20 Vytautas Keršanskas, *DETERRENCE: Proposing a more strategic approach to countering hybrid threats* (public version of the Deterrence Playbook), The European Centre of Excellence for Countering Hybrid Threats (March 2020). https://www.hybridcoe.fi/wp-content/uploads/2020/03/Deterrence.pdf. Accessed January 14, 2021.

also work against NATO.[21] A far more plausible interpretation is that Ukraine, due to its internal weakness and its historical, cultural, and economic ties with Russia, as well as its lack of protection by an alliance, presented a sui generis case that says nothing about Russia's willingness to risk a war with NATO. Regrettably, this view is almost absent from this discussion.

Neglecting an Opponent's Interests

At least in part, this alarmism is the result of the aforementioned incomplete "comeback" of deterrence. One particularly worrisome example of how certain essentials of deterrence are getting lost is the confusion about the role of interests. One of the fundamental tenets of deterrence research is that in judging whether to resort to force, an actor first looks at its opponent's interests rather than its capabilities. This means that even if the defender is stronger than the attacker, the asymmetry of interests can make deterrence fail.[22] In today's deterrence debate, however, this fundamental observation is largely ignored.

It is repeatedly argued, for example, that if NATO had been stronger militarily in 2014, Russia would not have dared to invade Eastern Ukraine and annex Crimea. This view dramatically undersells the fact that Russia's interest in preventing Ukraine from moving westward was far greater than the West's interest in going to war over Ukraine. In other words, for Russia, invading Eastern Ukraine was an endeavor worth the risk; Ukraine, with its unique ties to Russia, was an ideal victim. The West's military strength was never an issue, because there was never a deterrence relationship in the first place. Consequently, it does not represent a case of deterrence failure. That the case of Ukraine is still being overanalyzed says much more about the West's analytical weaknesses than about Russia's next hybrid move.

(Mis)interpreting an Opponent's Intentions

Another example of the incomplete comeback of deterrence is the tendency among many analysts to apply rather sweeping interpretations of an opponent's intentions. For example, a considerable number of Western analysts (notably from NATO's frontline states) interpret Russian actions as part of an offensive strategy: Destabilizing Ukraine and Georgia, adopting a nuclear strategy of "escalate to de-escalate," destroying the INF Treaty by deploying new nuclear missiles, and inventing an enigmatic but mischievous Gerasimov doctrine for hybrid warfare are all said to be

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21 "If Russia can annex territory in Ukraine, it can conceivably do the same in the Baltics." Gerald C. Brown, "Deterrence, Norms, and the Uncomfortable Realities of a New Nuclear Age," War on the Rocks (April 20, 2020). https://warontherocks.com/2020/04/deterrence-norms-and-the-uncomfortable-realities-of-a-new-nuclear-age/. Accessed January 14, 2021. See also Zdzisław Sliwa, Viljar Veebel, Maxime Lebrun, "Russian Ambitions and Hybrid Modes of Warfare," *Estonian Journal of Military Studies* 7 (2018), p86–108.

22 For example, Argentina occupied the Falklands in 1982 because the military junta judged that—irrespective of the U.K.'s military superiority—London's interest in these islands was much lower than Argentina's interest in getting them back. A nonnuclear and conventionally inferior country attacked a nuclear power, since its leaders felt that their interests warranted taking risks, and since they were confident that the conflict would not escalate to the nuclear level.

part of Moscow's plot to rebuild the Soviet Union or at least bring most of the former Soviet space under its control.[23]

Even worse, Russia's use of hybrid warfare against the West means that Russia is infinitely malign. In contrast to the Cold War, when the nuclear standoff kept both sides interested in largely staying away from each other, Russia is now constantly seeking to penetrate Western societies and economies, and even interfering in elections. In a way, it makes Russia appear even more dangerous than during the Cold War, when Soviet leaders largely respected tacitly agreed spheres of influence.

The more plausible interpretation—namely that Russia opportunistically seeks to defend what is left of its erstwhile "zone of privileged interests" against a vastly superior West, yet without risking a kinetic conflict—is getting lost in the alarmism of having to confront the ultimate malign actor. Although Moscow's forays in Syria, Libya, and elsewhere only became possible because the West left behind a vacuum for Russia to exploit, many Western observers see Russia's actions as proof of that country's relentless expansionism. This results in analytically doubtful worst case scenarios, which dramatically drive up deterrence requirements. If every possible malign action will eventually occur, as the opponent is capable of virtually anything, then deterrence, too, must be organized so as to deter every eventuality. At the same time, by postulating a rogue actor, these scenarios make any search for a modus vivendi with Russia look hopeless and futile.

The China Factor

Regarding the deterrence debate on China, the jury is still out on whether the Western strategic community will exert more analytical discipline. After all, whereas deterring Russia is a collective alliance effort, the burden of deterring China from military adventurism in Asia currently falls on the United States alone. The United States thus dominates the China debate among allies, many of whom do not regard China as an imminent military threat.[24] However, there are signs that a collective look at China will be more systematic than on Russia. Western worries about the speed of China's economic and military rise and its assertiveness on territorial and other issues are palpable. Beijing's handling of Hong Kong, its threats against Taiwan, its investments in key Western infrastructure projects, and not least its heavy-handed

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23 See the contributions in S. Frederick Starr and Svante E. Cornell (Eds.), *Putin's Grand Strategy: The Eurasian Union and Its Discontents* (Washington, DC: Johns Hopkins University, SAIS, 2014). https://www.silkroadstudies.org/resources/1409GrandStrategy.pdf. Accessed January 15, 2021. Also see U.S. House of Representatives, "U.S. Policy Towards Putin's Russia," Hearing before the Committee on Foreign Affairs, 114th Congress, 2nd Session (June 14, 2016). https://docs.house.gov/meetings/FA/FA00/20160614/105061/HHRG-114-FA00-Transcript-20160614.pdf. Accessed January 15, 2021.

24 NATO's 2019 London Declaration provides an example for bridging these views: "We recognise that China's growing influence and international policies present both opportunities and challenges that we need to address together as an Alliance." London Declaration, issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in London (December 3-4, 2019), para. 6. https://www.nato.int/cps/en/natohq/official_texts_171584.htm. Accessed January 15, 2021.

approach to the COVID-19 pandemic have all served to alert Western nations, including Europeans, to the arrival of a new "systemic rival."[25]

While China's military footprint outside Asia is still small, numerous steps—from staging military exercises in the Baltic Sea to pushing for greater influence in the Arctic—suggest that the military dimensions of China's rise will eventually have to be addressed collectively. How this will square with the deep economic ties between China and the West is impossible to predict, since a reversal of economic globalization appears unrealistic. Moreover, most European allies have neither military interests in Asia nor the military capabilities to project power to this region. Unless Europeans adopt a more global security outlook (sustained by greater investments in naval forces), much of their contribution to an eventual deterrence posture in Asia will therefore consist in supporting the United States politically and preparing to backfill in case U.S. forces would have to deploy from Europe to Asia in a crisis. This suggests that in a dialogue with its European allies on China, the United States needs to be patient. What appears paramount at this stage is that the transatlantic community acquires the expertise on China that it once had acquired on the Soviet Union. Getting China wrong could ultimately turn out to be more costly than misreading Russia.

The U.S. Factor in the Transatlantic Deterrence Debate

Any transatlantic debate on deterrence takes its cues from the U.S. debate. Due to its large international role, its correspondingly large military, and its sizable and vibrant strategic community, the United States has been at the forefront of deterrence thinking since the advent of the nuclear age. Its unique role as the military protector of many countries in and beyond NATO has given U.S. thinking on deterrence and other security matters enormous weight. If in the past mainstream U.S. deterrence thinking often had a streak of alarmism, it largely stemmed from concerns about the credibility of extended deterrence. As this concept seeks to deter an adversary from attacking an ally of the United States, rather than the U.S. homeland itself, it was burdened with a credibility dilemma that it sought to ameliorate by the forward-deployment of conventional and nuclear forces, as well as through unique nuclear sharing arrangements. In retrospect, it is fair to say that Europeans were generally less concerned with the specifics of the Western deterrence posture, as long as certain basics—above all, a strong and credible U.S. commitment to European security—remained assured.

The fact that a growing number of European observers now fear that this U.S. commitment is waning is among the greatest game changers in the deterrence debate. Washington's harsh criticism of European military underperformance as well

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25 "Both sides are committed to a comprehensive strategic partnership … [y]et there is a growing appreciation in Europe that the balance of challenges and opportunities presented by China has shifted. In the last decade, China's economic power and political influence have grown with unprecedented scale and speed, reflecting its ambitions to become a leading global power." European Commission, *E.U.–China—A strategic outlook* (March 12, 2019). https://ec.europa.eu/commission/sites/beta-political/files/communication-eu-china-a-strategic-outlook.pdf. Accessed January 15, 2021.

as the emergence of China as the new U.S. strategic rival have sparked European nervousness about Washington's continued commitment to the security of the continent.[26] Although the United States reacted promptly to reassure NATO's eastern allies after Russia's annexation of Crimea, thereby demonstrating its continued interest in European security, fears of abandonment have led to a lively discussion about European alternatives to U.S.-centric security arrangements. However, this discussion is likely to yield few tangible results. Europe remains a conglomerate of nation states of different sizes, cultures, historical experiences, and geographic outlooks. Hence, there is no European strategic culture that could form a basis for a European-only deterrence policy and posture. A U.S. exit from Europe may force some countries to explore new forms of closer defense cooperation, yet others are more likely to pursue separate bilateral deals with Washington.

In terms of conventional military power, Europe has shown to be incapable of even smaller-scale military interventions along the continent's periphery, relying instead on the United States to suppress Libyan air defenses, for example, and to supply the Europeans with ammunition. In the nuclear field, the situation is equally bleak. With the United Kingdom having "Brexited," the E.U. cannot count on London's nuclear support. France would never let an E.U. body decide over its small force de frappe. And E.U. members Austria and Ireland have championed a global ban on nuclear weapons that is fiercely opposed by the nuclear powers and other NATO members. In short, even if some European countries remain determined to invest in modern armed forces and high-end defense technology, there is no European alternative to a U.S.-centric deterrent, as there simply is no "Europe" that could carry such an enormous burden.

All this suggests that the paramount role of the United States in setting the overall direction of Western deterrence thinking will remain unchanged.[27] However, as the U.S. strategic community—like U.S. society more broadly—appears more and more polarized, deterrence thinking, too, has become bifurcated. While U.S. policy remains firmly grounded in what Keith Payne has termed "difficult deterrence" (e.g., strong conventional forces, limited nuclear options, missile defenses, little or no arms control), there is also an idealist streak that ranges from advocating more sweeping arms control measures all the way to nuclear abolition.[28] While this latter school of thought had failed when President Obama sought to adopt some of its elements during his first tenure, it still commands considerable political respectability and could return with a new Democratic administration.

Both schools of thought can be a challenge for European security. By giving short shrift to arms control and by advocating new weapon systems to fill alleged gaps in the Western deterrence posture vis-à-vis a more risk-prone Russia, the orthodox

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26 In 2018, President Trump allegedly even contemplated pulling the United States out of NATO, see John Bolton, *The Room Where It Happened: A White House Memoir* (New York: Simon & Schuster, 2020), Chapter 5.

27 Over the past decade, the U.S. has been instrumental in getting its allies to pay greater attention to cyberdefense, the importance of space, and the security implications of China's rise.

28 Keith B. Payne, *Shadows on the Wall: Deterrence and Disarmament* (Fairfax, VA: National University Press, 2020).

deterrence school tends to irritate those Europeans who worry about the effects of such policies on their own public opinion. By contrast, the arms control school's preference for cooperative solutions runs the risk of interpreting certain alliance achievements (e.g., nuclear sharing arrangements or U.S. ballistic missile defense installations in Europe) as a potential hindrance on the way to new agreements. Hence, some Europeans, notably in the continent's East, could get nervous about what in their view would constitute a naïve U.S. approach in dealing with Russia or other opponents.

While both schools of thought hold diametrically opposed views, they both are characterized by an increasingly alarmist tone. The deterrence school sees the United States and NATO losing out to the comprehensive strategies of Russia, China, and even North Korea, which are all said to have a much clearer idea about which means to apply in order to achieve certain ends. The arms control school views the West and its opponents as being on a collision course, with major conflict—either by design or by accident—being only a matter of time. Both schools use alarmistic language and imagery to bolster their respective case (i.e., to invest more in defense or in arms control and disarmament). While this is not fundamentally new, the deterrence discussion over the past few years has revealed one significant element of change; it has become entangled with the discussion on U.S. decline. In an approach that is typical for U.S. strategic culture, fears of losing the geopolitical competition have been channeled into a (more familiar) discussion about appropriate deterrence strategies. Alarmism is the inescapable result. Depending on the school of thought, the U.S. deterrent posture is either inadequate to deter malign opponents, or it needs to stop provoking these very opponents into competing even harder.

For many Europeans who, as pointed out above, are more geared towards a middle ground that seeks to combine deterrence and dialogue, both opposing strands in the current U.S. deterrence debate are challenging. Deterrence in Europe needs neither the demonization of opponents nor of nuclear weapons. However, if history is any guide, a sustained deterrence dialogue with the United States—bilaterally and within NATO—can help familiarize the transatlantic allies with their respective deterrence thinking. This is all the more important given the rise of China, which may confront the transatlantic community with an entirely new kind of deterrence challenge. As in the past, given its unrivaled military power and military spending, the United States will have the upper hand in these discussions. For Europeans to be heard, therefore, requires not only a sound understanding of the U.S. debate, including its "declinist" undercurrent, but also a willingness to accept U.S. thinking as sincere, even if not necessarily convincing.

What Next? Some Dos and Don'ts on Deterrence

After more than two decades of having received scant attention in the West, deterrence has finally reentered the strategic lexicon. However, the intellectual confusion about its meaning risks squandering the opportunity to use this debate as

a vehicle for building a new security consensus in a competitive strategic environment. To ensure that the deterrence debate helps achieve such a new consensus, the Western strategic community—political practitioners as well as academics—would do well to consider the following suggestions.

First, the concept of deterrence needs to be put back in its rightful place. This suggests, above all, a sustained educational effort. Particular emphasis needs to be put on the political and psychological context of deterrence, lest one encourages alarmism. A deterrence narrative should explain that conventional and nuclear deterrence remain viable concepts, but only under certain conditions; that the aggressor believes that the defender's major interests are truly at stake; that the aggressor is not completely irrational or outright suicidal; that both sides communicate with each other; and that the aggressor has not been pushed into a corner. As far as coping with non-kinetic/hybrid aggression is concerned, a plausible narrative should focus less on deterrence than on developing new tools that limit damage and/or raise the price of aggression. In this context, it is important to note that while authoritarian or one-party regimes may find it easier to command all levers of hybrid warfare, Western democracies, too, can act in the gray zone.[29]

Second, the deterrence debate needs far more intellectual discipline and terminological clarity. For example, arguing that nuclear weapons do not deter, because Japan continued to fight after Hiroshima, or that the Russian incursion into Ukraine demonstrated the futility of NATO's European-based tactical nuclear weapons, are non sequiturs that need to be called out and rebutted.[30] Moreover, as far as terminology is concerned, a sensible debate about deterrence is next to impossible for as long as every unwelcome action becomes a "hybrid aggression," mere risks become "threats" and the term "war" is used for branding even nonmilitary actions. In a similar vein, the fact that some actions of an opponent catch Western observers by surprise, as seems to have been the case with Russia's A2/AD developments, says more about Western analytical deficiencies (and the trap created by ill-fitting terminology) than it does about that opponent's malign intent.[31] Finally, much more sobriety is required when discussing the expectations of deterrence; hoping that one could signal to an opponent that "there's no point trying to disrupt our lives"[32] puts a level of faith in deterrence that it can never live up to.

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29 See the examples in Tim Sweijs and Samo Zilincik, *Cross Domain Deterrence and Hybrid Conflict,* The Hague Centre for Strategic Studies (HCSS) (December 2019). https://hcss.nl/sites/default/files/files/reports/Cross%20Domain%20Deterrence%20-%20Final_0.pdf. Accessed January 15, 2021.

30 For typical examples of attacking straw man arguments on nuclear deterrence, see Wilson, op. cit (fn 5); Tom Sauer, "Ukraine shows uselessness of NATO nukes in Europe," *Bulletin of the Atomic Scientists* (June 23, 2014). https://thebulletin.org/2014/06/ukraine-shows-uselessness-of-nato-nukes-in-europe/. Accessed January 15, 2021.

31 See the enlightening discussion on Russia's A2/AD bubble in Andrew Monaghan, *Dealing with the Russians* (Cambridge, MA: Polity Press, 2019), p33–37.

32 Elizabeth Braw, "We must learn what to do when the lights go out," *The Times* (May 10, 2019). https://www.thetimes.co.uk/article/we-must-learn-what-to-do-if-the-lights-go-out-xlcph6cqt. Accessed January 15, 2021.

Third, discussions on deterrence need to be actor-specific. This is nothing new—witness the debate about "tailored deterrence"—yet the current debate is often characterized by an all-hazards approach that is ill-suited to the challenge. One needs to make a greater effort to look at the opponent's interests, by trying to put oneself in his shoes, and may also have to accept that some of the opponent's actions may actually be a reaction to one's own. And there is more. In addition to examining what it takes to deter a potential aggressor, one must also explore other means that may lessen tensions (e.g., agreed spheres of influence, arms control) and could thus help relax deterrence requirements. Similarly, one should refrain from hyping every low-level (hybrid) aggression into a precursor for a major military assault, nor should one generalize about a particular action being the template for the next. Above all, one should not deceive oneself into believing that by adding the word "modern" one could safely discard much of what has been written about deterrence in the past 70 years.

Fourth, greater emphasis must be put on resilience. While enhancing the resilience of, say, national cyber or energy networks can also be seen as a kind of deterrence by denial, deterrence is not the key consideration in the resilience calculus. Rather, it proceeds from the assumption that attacks will happen and, consequently, the stricken company, nation, or alliance must be able to take the hit and bounce back. This does not diminish the value of exploring new ways of deterring such non-kinetic, nonmilitary attacks, in particular those that threaten existential interests.[33] However, as deterrence research in these domains becomes more refined, the opportunities and limits of this concept will become more apparent, and resilience may well emerge as the more useful paradigm for coping with most nonmilitary challenges. Rather than trying to stretch or redefine deterrence to make it more applicable to today's more complex lower-level threats, resilience contemplates the possibility of deterrence failure. This may strike some observers as fatalistic, yet it is the most plausible approach for prevailing in an emerging multiplayer world.

Fifth, deterrence needs to be taught not only to current security and defense professionals; it must also embrace the successor generation. The objective of such an endeavor must not be limited to familiarizing aspiring security analysts with the classic works on deterrence, or enable them to regurgitate contemporary military terminology. Any educational effort on deterrence for the successor generation should first and foremost enable them to put the concept of deterrence in its broader political and psychological context. The United States and the United Kingdom are doing considerable work in this regard that should serve as an inspiration for other European countries, where initiatives to include the successor generation still seem to be centered on arms control simulations and other subjects with a stronger diplomatic–civilian dimension.[34]

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33 NATO allies have declared that a cyber or hybrid attack can trigger Article 5 of the Washington Treaty. The 2018 U.S. Nuclear Posture Review hints at the possibility of a nuclear response to a major non-kinetic attack.

34 See, for example, the Center for Strategic and International Studies' (CSIS) PONI Program, similar efforts by U.S. STRATCOM and NATO, and by the Royal United Services Institute (RUSI).

Encouraging the younger generation to engage in a broader deterrence debate should also serve as an antidote to the information overflow caused by the internet, which often results in students attaching equal weight to publications of vastly different quality. Given that deterrence is a highly speculative concept with little empirical evidence to support its various schools of thought, it is essential that newcomers to this subject are provided with the analytical tools that enable them to make informed choices.

Finally, the West needs to take a critical look at itself.[35] The current debate on deterrence—from the attempt to opt out of the nuclear age altogether to the desire to deter hybrid threats—reveals as much about the West than it does about its adversaries. It appears as but another expression of the crisis in Western self-confidence, of doubts about the Western political and economic model, and fears of dwindling Alliance solidarity in an ever more fragmenting West. Put in starker terms, the alarmism of the current deterrence debate is at least in part just another manifestation of the West falling out of its illusion that it will continue to dominate the international system. This crisis in Western self confidence, as one astute observer put it, "has been accompanied by a tendency to downplay the weaknesses of our competitors; to see only strength wielded in the service of superior long-term strategies."[36] As a result, the West risks underplaying its own strengths.

Conclusion

If deterrence is to remain an effective instrument of preserving peace, Western analysts must not discredit this concept by delegitimizing it morally, nor overtax it by stretching into the "gray areas" of interstate competition. This suggests a much greater investment in a sustained deterrence discussion among the transatlantic allies. This discussion, which must also seek to include the successor generation, should focus not only on military deterrence requirements vis-à-vis Russia and, eventually, others such as China. To avoid becoming a mere echo chamber of mainstream deterrence arguments, the emphasis of such a discussion should be on those countries' interests and perceptions, as well as on political and military steps that could alleviate the deterrence challenge. Such a discussion would naturally include the hybrid dimensions of modern interstate competition and conflict, yet without getting caught in that debate's inherent alarmism. Finally, it also would have

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35 To mention just two obvious examples: How can NATO allies collectively and accurately analyze Russia's security policy when their own decisions that affect Russia, for example, on the NATO enlargement process, are excluded from the picture? And how can NATO and the E.U. cope with what is arguably their biggest current challenge—namely the erratic policies of certain member states—when a discussion about these worrisome developments within these institutions is essentially foreclosed?

36 Chris Tuck, "Hybrid War: The Perfect Enemy," DEFENCE-IN-DEPTH (King's College, 2017), https://defenceindepth.co/2017/04/25/hybrid-war-the-perfect-enemy/. Accessed January 15, 2021.

to allow for a somewhat distinct intra-European debate about options for a European deterrent, however implausible such a project may appear at this stage.[37]

Such a sustained discussion on deterrence would underscore the logic of transatlantic solidarity in security—a notion that has come under increasing pressure. At the same time, however, the Western strategic community needs to resist the temptation to use such a deterrence dialogue as a substitute for a broader political discussion on how to interact with competitors. Even the most sophisticated deterrence framework cannot replace political strategy.

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37 For a more optimistic view see Uwe Nerlich, *Opinion: Macron's European defense initiative can work,* Geopolitical Intelligence Services (April 10, 2020). https://www.gisreportsonline.com/opinion-macrons-european-defense-initiative-can-work,defense,3132.html. Accessed January 15, 2021.

The German Debate: The Bundestag and Nuclear Deterrence
Pia Fuhrhop

Introduction

In recent years, nuclear deterrence has not ranked very prominently as an issue in the German Parliament. Since Germany has been led by its two largest parties, the Christian Democratic Union (CDU/CSU) and the Social Democrats (SPD) through a "grand coalition" government, one may even argue that a substantive debate on nuclear deterrence does not exist at all. Two principal reasons explain why. First, a large part of parliamentary airtime and media coverage does not deal with the problems and merits of specific deterrence policies but with trends in global and European security. This strategic debate on Germany's place in a changing international security environment largely revolves around the notion of increased German responsibility for international affairs. Its implications for Germany's defense budget have dominated public parliamentary attention, thus overshadowing more detailed policy questions.

Second, parliamentary debates start from a different vantage point. From the Bundestag's perspective, the issue is less how nuclear deterrence can be made more effective but rather how deterrence policies are balanced by concrete steps toward disarmament. Overall, the concept of nuclear deterrence remains highly contested in the Bundestag, supported only within the ranks of the CDU/CSU and the Liberals.[38] Not only does the left-wing opposition (Socialists and Green Party) reject the notion, significant parts of the Social Democratic Party (SPD) parliamentary group also harbor reservations. Both in 2013 and in 2018, Social Democrats campaigned for a strong German commitment to revive international and European arms control negotiations and for a negotiated termination of Germany's participation in nuclear sharing. On the campaign trail, leading Social Democrats rejected the notion that Berlin should commit more resources for deterrence and defense. In a way, Social Democrats and particularly the left wing of the parliamentary faction served as in-house opposition on matters of (nuclear) deterrence.

Two examples illustrate the pertinent dynamics within the German parliament. First, the parliamentary debate on the Treaty on the Prohibition of Nuclear Weapons (TPNW) presented a welcome opportunity for the opposition to shame the government for an alleged lack of commitment to nuclear disarmament. Second, the recent dispute on Germany's participation in NATO's nuclear sharing arrangements rarely touched

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38 The right-wing Alternative for Germany (AfD) holds highly inconsistent views on NATO's deterrence posture. While the program and some in the party argue strongly for an end to the stationing of all foreign troops in Germany, others have argued that Germany should invest in allied nuclear capabilities. It is probably due to these inconsistencies that the AfD does not play a role in shaping the parliamentary debate, despite being the biggest opposition party.

upon the specific deterrence value of the dual-capable aircraft provided by Berlin. As parliament largely engages in ritualistic debates, leaving out many of the more specific questions of nuclear deterrence, it misses the opportunity to help clarify Berlin's position on the issue.

The Bundestag's Role in Germany's Nuclear Policies

In principle, the Bundestag has a limited constitutional role in defining Germany's foreign and security policy as this remains the prerogative of the government. That does not mean, however, that parliamentary exchanges are inconsequential. The government is subject to parliamentary approval, and its power relies on a stable majority in the Bundestag. Positions of parliamentary factions or even wider debates in the governing parties play a major role in determining the room for maneuver of any German government. The Bundestag also has the ultimate budgetary sovereignty in matters of foreign and security policy. Issues related to nuclear deterrence are subject to consultations in three separate committees: the Foreign Relations Committee; the Defense Committee; and the Subcommittee on Disarmament, Arms Control, and Nonproliferation. Last, but not least, parliamentarians play an important role as multipliers for civil society, raising awareness of certain issues, and serving as a transmission belt for public opinion.

The two grand coalitions have consistently described German foreign policy in terms of a two-pronged strategy: Germany would champion international arms control and disarmament efforts while increasing defense spending and its contributions to NATO deterrence. In this thinking, (nuclear) deterrence is not an end in itself but a means to create the conditions for long-term cooperative security. Deterrence and disarmament are flip sides of the same coin. For example, the latest coalition agreement pledges to work towards the goal of a world without nuclear weapons while at the same time reaffirming Germany's commitment to NATO's conventional and nuclear deterrence policy. Successful disarmament negotiations are described as a precondition to changing Berlin's own contribution to nuclear sharing.[39] Similarly, the Ministry of Defense's white book supports NATO's policy to remain a nuclear alliance as long as nuclear weapons exist and underscores Germany's commitment to strengthen international nuclear nonproliferation.[40] Consequently, parliamentary exchanges have not dealt with the legitimacy and concrete design of nuclear deterrence but with the balance of deterrence versus disarmament policies.

The fact that Berlin is much more focused on the balancing act between deterrence and disarmament also reflects complex public opinion on the issues.

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39 Christian Democratic Union/Christian Social Union/Social Democratic Party, "Ein neuer Aufbruch für Europa, Eine neue Dynamik für Deutschland, Ein neuer Zusammenhalt für unser Land," Coalition Agreement (March 12, 2018), p148. https://www.bundesregierung.de/resource/blob/656734/847984/5b8bc23590d4cb2892b31c987ad672b7/2018-03-14-koalitionsvertrag-data.pdf?download=1. Accessed January 15, 2021.

40 Bundesregierung, "Weißbuch zur Sicherheitspolitik und zur Zukunft der Bundeswehr," Bundesregierung Deuschland (July 13, 2016), p62–65, p82–83.

Since 2014, support has slowly grown for increasing the defense budget, but the majority of Germans (59%) still oppose further increases.[41] A majority also support Berlin's commitments to NATO and the E.U. and ask the government to take on more responsibilities within these institutions. Importantly, they were able to separate this pro-Western view from their overwhelming distrust towards the Trump administration. Nevertheless, a large (yet decreasing) percentage of the population considers it important to smooth relations with Russia. Even in light of a major refugee crisis and a rapidly deteriorating security environment in Europe, a slight majority of German citizens ask the government to act with restraint in international crisis management. One possible explanation is that a consistent majority of the population feels that its own situation is rather safe. In a 2019 poll for the Körber Foundation, 14% of the interviewees described their situation as very safe and 62% as rather safe.[42]

Shame on You? Germany and the Treaty on the Prohibition of Nuclear Weapons

In August 2016, the German government voted against the report of the open-ended working group on nuclear disarmament (OEWG) despite its active participation in the Vienna Conferences on the Humanitarian Impact of Nuclear Weapons. In line with its NATO allies (with the exception of the Netherlands), Berlin did not partake in the negotiations on the ban treaty and has not signed the TPNW. The German government argues that the TPNW will have limited impact without buy-in from nuclear weapons states; that the TPNW seeks to establish a competing norm to the NPT; that central questions, such as the relationship between the TPNW and the NPT and verification mechanisms are unclear; and that Germany's enduring commitment to NATO's nuclear sharing arrangements is incompatible with the provisions of the new treaty.[43] The government, at least rhetorically, remains committed to a step-by-step approach that involves nuclear weapon states.

In the Bundestag, this position was met with criticism by the left-wing opposition. In a concerted effort with prominent NGOs, such as the International Campaign to Abolish Nuclear Weapons (ICAN), International Physicians for the Prevention of Nuclear War (IPPNW), Greenpeace, and others, the parliamentary opposition adopted a shaming strategy to berate the government's decision. In particular, the opposition

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41 In a 2018 YouGov poll, 59% reject an increase of defense spending, Desiree Linede, "Mehrheit der Deutschen halt höhere Verteidungsausgaben für falsch," Handelsblatt (April 4, 2020). https://www.handelsblatt.com/politik/deutschland/nato-treffen-mehrheit-der-deutschen-haelt-hoehere-verteidigungsausgaben-fuer-falsch/24182186.html?ticket=ST-176239-QyyWoz6wsiameJqOWINM-ap3. Accessed January 15, 2021.

42 For example, see public opinion data gathered by the Körber Foundation for the Berlin Pulse editions 2017–2020. Körber Foundation, The Berlin Pulse 2020 – Special Edition (2020). https://www.koerber-stiftung.de/en/the-berlin-pulse/special-edition-2020. Accessed January 15, 2021.

43 Oliver Meier, "Schriftliche Stellungnahme zur öffentlichen Anhörung des Unterausschuss Abrüstung, Rüstungskontrolle und Nichtverbreitung, Deutscher Bundestag," Statement for the Public Hearing of the Subcommittee on Disarmament in German Bundestag (March 3, 2020). https://www.bundestag.de/resource/blob/684648/353a1138e1319259b1621b8bfc3b346c/Stellungnahme-Dr-Oliver-Meier-IFSH-data.pdf. Accessed January 19, 2021.

called out Social Democrats who had campaigned on championing arms control agreements internationally for failing to deliver their campaign promises. In 2016, the Greens issued an inquiry into the government's opposition to the negotiations and its compatibility with the coalition agreement's commitment to build "the conditions for a world free of nuclear weapons."[44]

A similar tone characterizes the two ultimately unsuccessful parliamentary resolutions supported by the Socialists and the Greens since 2017. These resolutions stated that substantial progress towards disarmament within the framework of the NPT was nowhere in sight—quite the opposite.[45] Accordingly, the resolutions welcomed the majority of nonnuclear weapon states taking matters into their own hands on the practical and necessary steps towards disarmament. In their view, the government had missed an important opportunity to ensure that the TPNW and the NPT were compatible by abstaining from the negotiations.

Given the lack of tangible progress on the step-by-step approach, the German government and its supporting parliamentary factions had, according to their critics, a real credibility problem: "With its opposition (to the ban treaty), the federal government sends the wrong signal and it massively harms Germany's credibility in the area of arms control."[46] Based on this analysis, the resolutions demand that Germany participate constructively in negotiations of the ban treaty (in 2017), later sign the TPNW (2018), and end hosting U.S. nuclear weapons in Germany.[47]

These arguments were supported by a prominent, yet ultimately unsuccessful, campaign involving ICAN and many of the NGOs associated with Germany's peace movement, traditionally close not only to the left-wing opposition but also to the governing Social Democrats. In 2017, ICAN commissioned a poll showing that 70% of the German population would support a German accession to the TPNW and that this support was almost equally high for voters of the CDU/CSU as for those of more left-wing parties.[48] NGOs had heavily campaigned members of Parliament to take a prominent stance in favor of the ban treaty and published a letter addressed to then-SPD foreign minister Sigmar Gabriel calling for Germany to constructively engage on the treaty negotiations.[49]

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44 Deutscher Bundestag, "Antwort der Bundesregierung auf die Kleine Anfrage der Fraktion Bündnis 90/die Grünen – Deutschlands Beitrag zur nuklearen Abrüstung und Ächtung von Atomwaffen," *Drucksache* 18/10002 (October 13, 2016).

45 Bündnis 90/die Grünen and Die Linke, "Verhandlungen über einen Atomwaffenverbotsvertrag aktiv unterstützen," Deutscher Bundestag, *Drucksache* 18/11609 (March 23, 2017).

46 see Deutscher Bundestag, *Drucksache* 18/10002, p1.

47 Deutscher Bundestag, *Drucksache* 18/11609; Die Linke, "Dem Atomwaffenverbotsvetrag beitreten-Atomwaffen abziehen," Deutscher Bundestag, *Drucksache* 19/98 (November 22, 2017).

48 ICAN, "Umfrage: Deutsche wollen Abzug von Atomwaffen" (July 6, 2018). https://www.pressenza.com/de/2018/07/umfrage-deutsche-wollen-abzug-der-atomwaffen/. Accessed January 19, 2021.

49 ICAN, "Bevölkerung für Beitritt zu Atomwaffenverbot" (September 11, 2017). https://www.lebenshaus-alb.de/magazin/010904.html. Accessed January 19, 2021; Letter written by ICAN and others to German foreign minister, ICAN, "Deutschlands Beteiliung an Verhandlungen über ein Atomwaffenverbot" (May 28, 2017). https://www.icanw.de/wp-content/uploads/2017/06/2017-05-24_Brief_Gabriel_finalversion.pdf. Accessed January 15, 2021.

Still, these initial attempts to split government factions and to shame the Social Democrats into supporting the ban treaty failed; neither resolution passed Parliament. In response to the two resolutions, the government and its supporting caucuses argued that Berlin was getting the balancing act between deterrence and disarmament right.[50] On the deterrence side, parliamentarians pointed out that among Germany's closest European allies there was no majority in favor of the TPNW and that the security environment would not permit such drastic decisions. On the disarmament side, the government and members of Parliament stressed Berlin's efforts to strengthen the global disarmament regime and to build bridges between supporters of the ban treaty and its opponents. They noted, for instance, their role in submitting a successful resolution to the UN General Assembly on a Fissile Material Treaty, which garnered support from the United States, France, and the United Kingdom, as well as their active involvement in the U.S.-led International Partnership for Nuclear Disarmament Verification (IPNDV).

Subsequently, the German foreign ministry has championed various initiatives to demonstrate commitment towards concrete steps for nuclear disarmament and nuclear risk reduction. In 2019, for example, France and Germany organized a nuclear disarmament verification exercise ("NuDiVe") under the auspices of the IPNDV. Berlin has also been an active member of the Stockholm Initiative on Nuclear Disarmament, hosting the group's second ministerial meeting in February 2019.[51]

More recently, proponents of the ban treaty have shifted tactics away from confronting and shaming colleagues supporting deterrence measures to building a bottom-up consensus across party lines in support of the ban treaty. In September 2019, members from the SPD, the Left, and the Greens founded a "parliamentary circle for the nuclear ban treaty."[52] This informal gathering of parliamentarians now includes MPs from all major factions, including the CDU/CSU, and seeks to build bridges between different parties. MPs, NGOs, and initiatives from cities and local governments committed to championing disarmament come together in a confidential setting in order to generate support for Germany's accession to the ban treaty. At the moment, it is too early to tell to what extent these efforts will be successful.

The Future of Nuclear Sharing

The recent parliamentary fallout over the future of Germany's participation in NATO's nuclear sharing arrangements is a vivid testimony that a detailed debate on

50 See speeches by MPs in Deutscher Bundestag, "Plenarprotokoll TOP 17 Atomwaffenverbotsvertrag beitreten," Plenary Protocol (February 23, 2018), p1271–1274.

51 IPNDV, "Experts Gather in Jülich, Germany for Nuclear Disarmament Verification (NuDiVe) Exercise" (September 24, 2019). https://www.ipndv.org/news/ipndv-experts-gather-in-julich-germany-for-nuclear-disarmament-verification-nudive-exercise/. Accessed January 15, 2021. Auswärtiges Amt, "Advancing nuclear disarmament: meeting of the Stockholm Initiative in Berlin" (February 25, 2020). https://www.auswaertiges-amt.de/en/aussenpolitik/themen/abruestung/stockholm-initiative/2310314. Accessed January 19, 2021.

52 Kathrin Vogler, "Parlamentskreis für ein Atomwaffenverbot gegründet" (September 12, 2019). https://www.kathrin-vogler.de/start/aktuell/details/news/dokumentation-pressemitteilung-parlamentskreis-atomwaffenverbot-gegruendet/. Accessed January 15, 2021.

the logic of nuclear deterrence is absent. Alliance considerations and Berlin's role and contribution to arms control in Europe are the major topics of concern. In contrast to the debate over the TPNW, divisions between supporters and opponents of nuclear hosting cut across the governing coalition and opposition.

The myriad of views is remarkable given the former cross-partisan nature of the issue. In 2010, a rare cross-factional resolution of all parties in the Bundestag welcomed "as part of the development of NATO's new Strategic Concept, to work within the Alliance and with our U.S. allies to ensure that the nuclear weapons remaining in Germany are withdrawn" and tasked the government to work towards a reduction of the role of nuclear weapons in NATO.[53] Against the background of President Obama's vision of a nuclear-free world, the time appeared to have finally come to rethink NATO's nuclear sharing procedures. The cross-factional nature of the proposal reflected a widespread public opposition to hosting American nuclear weapons that still holds today. A recent 2019 poll, commissioned by ICAN, found that up to 60% of the German population rejects this arrangement.[54]

Today, this consensus is beginning to fray. The sweeping changes to European security in the aftermath of Russia's invasion of Ukraine and the rapidly deteriorating transatlantic relationship that took place under the Trump administration prompted German parliamentarians to reassess their views on nuclear matters. In 2016 and in response to Macron's speech in 2019, individual conservative lawmakers even flirted with the prospect of a Eurodeterrent, but were quickly whistled back by the CDU/CSU leadership.[55]

Parties also differed in their response to the demise of the Intermediate-Range Nuclear Forces (INF) Treaty in 2018. While there was broad consensus in 2018 that the German government should champion efforts to save the treaty,[56] important differences came to light once NATO reluctantly fell behind the U.S. decision to withdraw from the INF Treaty. According to the Socialists and the AfD, NATO and the United States were equally to blame for the treaty's demise and Moscow's violation

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53 Deutscher Bundestag, "Deutschland muss deutliche Zeichen für eine Welt ohne Atomwaffen setzen," *Drucksache* 17/1159 (March 24, 2010).

54 ICAN, "Umfrage: Deutsche gegen neue Atombomber" (April 24, 2019). https://www.ippnw.de/atomwaffen/atomwaffenpolitik/artikel/de/umfrage-deutsche-gegen-neue-atombom.html. Accessed January 15, 2021. In this 2016 poll, 85% want to see U.S. weapons removed. IPPNW, "Überwältigendes Vorum für den Abzug und das Verbot von Atomwaffen" (March 23, 2016). https://www.ippnw.de/atomwaffen/atomwaffenfrei/artikel/de/ueberwaeltigendes-votum-fuer-abzug-und.html. Accessed January 15, 2021.

55 Oliver Meier, "Why Germany won't build its own nuclear weapon and remains skeptical of a Eurodeterrent," *Bulletin of the Atomic Scientists* 76 (2020), p76–84.

56 Prominent foreign policy experts from the governing coalition later made headlines with their own proposal to dissolve the tensions: Russia, they suggested, should station the SSC-8 beyond the Ural Mountains out of reach from European territory, and in return, NATO should offer transparency over its missile defense installations. "Deutsche Abgeordnete schlagen russischen Raketenrückzug vor," *DIE ZEIT* (March 2, 2019). https://www.zeit.de/politik/ausland/2019-02/inf-vertrag-abruestung-kiesewetter-muetzenich-vorschlag-9m729-raketen. Accessed January 15, 2021.

was not a clear-cut matter.[57] All other factions acknowledged that the development and deployment of Russian SSC-8 missiles were clear violations of the treaty and a serious threat to European security.

Still, there was wide disagreement over how Germany and NATO should respond. Overall, Social Democrats, the CDU/CSU, and Liberals were keen to avoid the impression that a large-scale counter-deployment debate was in the making. The SPD ruled out early on that it would support the stationing of new intermediate-range missiles on German soil.[58] Even the majority of the CDU/CSU warned that a tit-for-tat strategy would be the wrong answer; they emphasized focusing on German contributions to nuclear sharing and tactical air defense systems, where parliamentary decisions are to be made. By contrast, the Greens, the Socialists, and the AfD renewed their call for the German government to end nuclear sharing, to exclude the possibility that intermediate-range missiles (nuclear or conventional) would be deployed in Germany, and to allow inspections of NATO's missile defense installations in exchange for increased Russian transparency over the SSC-8 missiles.[59] Against this background, it comes as no surprise that these cleavages resurfaced once the renewal of Germany's nuclear-capable aircraft was on the table.

Parliament and the Tornado Replacement Decision

In the case of nuclear sharing, the parliament has a direct influence on Germany's policy and position since the renewal of the dual-capable aircraft is a budgetary decision made within the Bundestag. That the aging Tornado fleet would have to be modernized had been a well-known fact for years. In 2017, a report to Parliament detailing the readiness of German forces found that of the 93 Tornado aircraft, only 63 could be used by the German armed forces and only 26 aircraft were combat-ready.[60] The Bundesrechnungshof, the Federal Audit Office, detailed that having the Tornado fly until 2030 would cost more than €7.00 billion alone because replacement,

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57 Julia Berghofer and Katarzyna Kubiak, The German position on the INF treaty, in: The European INF Initiative Project Meeting, Reponses to the INF treaty crisis: the European Dimension, Odessa Center for Nonproliferation and Swedish Radiation Safety Authority (May 3, 2019). http://odcnp.com.ua/images/pdf/Europe-Responces-to-INF-Crisis.pdf. Accessed January 19, 2021.

58 Rolf Mützenich, "U.S.-Raketen in Deutschland? SPD warnt vor neuem Wettrüsten" (November 19, 2018) https://www. rolfmuetzenich.de/pressespiegel/us-raketen-deutschland-spd-warnt-neuem-wettruesten. Accessed January 15, 2021.

59 Bündnis90/Die Grünen, "Glaubhafter Einsatz für nukleare Abrüstung—Nationale Handlungsspielräume nutzen," Deutscher Bundestag, Resolution 19/976 (Feburary 28, 2018); Resolution by CDU/CSU and SPD, "Den INF-Vertrag als Grundpfeiler atomarer Sicherheitsarchitektur und Kernelement europäischer Sicherheit erhalten," Deutscher Bundestag, Resolution 19/956 (February 27, 2018); Plenary Debate in the Bundestag, "INF-Vertrag bewahren, Aufrüstung in Europa verhindern, Atomwaffen abziehen" (February 1, 2019). https://dipbt.bundestag.de/dip21/btp/19/19078.pdf#P.9194. Accessed January 15, 2021. Julia Berghofer and Katarzyna Kubiak, The German position on the INF treaty.

60 Bundesministerium der Verteidigung, "Bericht zur materiallen Einsatzfähigkeit der Hauptwaffensysteme der Bundeswehr 2017" (February 26, 2018). https://www.dbwv.de/fileadmin/user_upload/Mediabilder/DBwV_Info_Portal/Politik_Verband/2018/Bericht_Einsatzbereitschaft.pdf. Accessed January 15, 2021.

repair, and development are so expensive.[61] Since early 2019, the Defense Ministry has narrowed the options for replacement to two alternatives: the Eurofighter and the American F-18. This decision was based on three arguments. First, in order to be able to replace the Tornado by 2030, Germany would have to buy existing aircraft "off the shelf." Second, Germany wanted its decision for the F-18 to be viewed as a "bridging technology" while major future investments would seek to secure the technological know-how and jobs in Europe. Third, Germany also wanted to demonstrate the Defense Ministry's commitment to the Franco-Spanish-German Future Combat Air System (FCAS).[62]

After having postponed the decision to replace the Tornado for years, the Ministry of Defense finally proposed to Parliament the following option: Germany would buy 93 Eurofighters and 45 F-18s, 30 of which will replace the nuclear sharing role of the Tornado. While the government had already agreed to the proposal, the Ministry's approach caused controversy in Parliament. The Social Democrats, in particular, felt they had not been adequately consulted given the deeply rooted rejection that many parliamentarians hold against Germany's continued participation in nuclear sharing. Only several weeks prior, the SPD caucus had issued a paper on its vision for arms control asking for "faithful, factual and thorough debate" on the future of nuclear sharing and the replacement of the Tornado.[63]

In an interview for German newspaper *Der Tagesspiegel*, Social Democratic caucus leader Rolf Mützenich gave a definite answer to the debate: "The U.S. has changed its nuclear strategy in a radical way which makes the use of nuclear weapons here in Europe much more likely. I am of the opinion that we need significant nuclear disarmament. Nuclear weapons on German soil do not increase our security, quite the contrary."[64] After six years of soul-searching and consultation, and despite a commitment in the government's coalition agreement to procure new dual-capable aircraft (DCA), government factions were unable to make a final decision on procurement.

Nuclear Sharing: Three Camps and Their Arguments

Broadly speaking, there are three camps when it comes to the future of nuclear sharing. They differ on three key aspects and questions: What are the military uses

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61 The Bundesrechnungshof is Germany's independent audit institution advising and overseeing government spending. The report on the Tornado program was reported on in *Bayrischer Rundfunk*, "Rechnungshof kritisiert offenbar Weiterbetrieb von Tornado-Kampfjets," BR aktuell (April 10, 2020).

62 Annegret Kramp-Karrenbauer, "Statement ahead of the Defense Committee Meeting" (April 22, 2020). https://www.bmvg.de/de/mediathek/akk-statement-kampfflugzeug-tornado-nachfolge-251548. Accessed January 15, 2021.

63 Social Democratic Caucus, "Sicherheit durch Dialog, Transparenz und Vertrauen—Sozialdemokratische Initiativen für Abrüstung, Rüstungskontrolle und Nicht-verbreitung," SPD Positionspapier (March 3, 2020). https://www.spdfraktion.de/system/files/documents/positionspapier-abruestung-20200303.pdf. Accessed January 19, 2021.

64 "Es wird Zeit, dass Deutschland die Stationierung künftig Ausschließt," *Tagesspiegel* (May 3 2020). https://www.tagesspiegel.de/politik/spd-fordert-abzug-aller-us-atomwaffen-aus-deutschland-es-wird-zeit-dass-deutschland-die-stationierung-zukuenftig-ausschliesst/25794070.html.

and risks associated with forward deployed nuclear weapons? Does Germany's participation in operational nuclear sharing translate into special influence over NATO's nuclear policies? What would be the effects on alliance cohesion if Berlin left the operative part of nuclear sharing?

The first camp can be termed abolitionists, comprising the Socialists, the left wing of the Social Democrats and the Greens. For these abolitionists, the withdrawal of American nuclear weapons has been a cornerstone of their foreign policy and is set in stone in their party programs for decades. "Nuclear sharing is the supreme insecurity guarantee," reads the headline of a press statement by Die Linke, Germany's democratic socialist political party.[65] The Socialists and Greens assert that nuclear deterrence is a fundamentally flawed policy that endangers world peace. In their view, Berlin's nuclear sharing agreements are to be suspended immediately as they are incompatible with Germany's commitments under the NPT and its declared policy of championing international arms control.

Prominent leaders of the Greens, the Socialists, and Social Democrats claim that sweeping changes in U.S. nuclear doctrine and posture make existing nuclear sharing arrangements untenable. Recent changes in U.S. nuclear doctrine and arsenals pose great dangers to European security; the development of low-yield warheads and recent changes in the U.S. Nuclear Posture Review, in particular, lower the threshold for nuclear war.[66] They doubt that Germany has increased influence on NATO's nuclear posture and doctrine, let alone U.S. nuclear policies. In their opinion, the rapid decline of the nuclear arms control architecture underscores that German influence is rarely more than wishful thinking.

A second group may be called uneasy progressives. These Social Democratic and Green parliamentarians certainly struggle to explain NATO's current sharing arrangements and to convincingly sell their importance to the critical popular base. Still, most would argue that in light of the threat posed by Russia's nuclear modernization and aggressive behavior in Europe, some form of credible (nuclear) deterrence is needed. Like abolitionists, this camp has voiced doubts about the extent to which tactical nuclear weapons on dual-capable aircraft really serve to increase NATO's credibility.

For all this criticism, these MPs have warned of the dangers of unilateral German withdrawal. They do not want to be seen as turning a blind eye to Russia's nuclear saber-rattling and to reward Russia's violation of treaty obligations such as the Budapest Memorandum or the INF Treaty. Whether in the context of NATO or the E.U., they argue, Germany has a particular duty to reassure its Baltic and Eastern European

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65 Sevim Dagdelen, "Nukleare Teilhabe ist ultimative Unsicherheitsgarantie," press release (April 28, 2020); Die Linke, "Geld fürs Gesundheitssystem statt für atomare Kampfbomber," Deutscher Bundestag, Resolution 19/18750 (April 22, 2020).

66 Rolf Mützenich, "Deutschland und die nukleare Teilhabe Plädoyer für eine notwendige und ehrliche sicherheitspolitische Debatte," Internationale Politik und Gesellschaft (May 7, 2020); Jürgen Trittin, "Atomkrieg darf nie geführt werden," *Die Welt* (May 14, 2020). https://www.welt.de/debatte/article207981409/Antwort-auf-US-Botschafter-Grenell-Haende-weg-von-Atombomben.html. Accessed January 19, 2021.

allies. Thus, calls from Polish commentators and the United States Ambassador to Poland insinuating that U.S. nuclear weapons could easily resurface in Poland, should Berlin have them withdrawn from Germany, were taken very seriously by this group. In times of geopolitical rivalry and great insecurities in Europe, these parliamentarians are acutely aware that unilateral changes would exacerbate existing tensions and generate skepticism about German reliability as a partner in Europe.

It is still important to note, however, that support for nuclear deterrence hinges substantially on the nexus between deterrence and disarmament. Progressive supporters of nuclear sharing have argued that a unilateral German exit would not help reduce the numbers or salience of nuclear weapons. In such a scenario, SPD Foreign Minister Heiko Maas has repeatedly claimed that Germany would lose its ability to impact the disarmament leg of NATO's policies.[67]

Last but not least, there is the group of nuclear sharing supporters, composed of liberals and Christian Democrats, and elements of the AfD. In their opinion, the changed European security landscape after 2014 justifies and necessitates the continuation of NATO's nuclear deterrence posture. Russia's breach of the Budapest Memorandum and the INF Treaty fundamentally altered the European security architecture. It is thus of immense importance for NATO to avoid decoupling European from American security and allowing different zones of security within the transatlantic alliance. For them, forward-deployed nuclear weapons are an essential element of NATO's flexible response, as they signal that Russian territory will not remain a sanctuary if Moscow decided to attack a European state with nuclear weapons. They do reject the notion that the U.S. is an unreliable partner or that the populism of the Trump administration affected issues of nuclear deterrence.[68]

Yet, when it comes to publicly justifying the unpopular German participation in nuclear deterrence, alliance considerations play a larger role. Conservatives underline that nuclear sharing is the most essential element of risk sharing within NATO. Hence, Germany's foremost interest is being a reliable ally to its U.S. and European partners. Most of all, supporters hold that nuclear sharing gives Berlin a strong say in nuclear decision-making and an influential pro-arms control voice within the alliance, and it also helps to prevent further nuclear proliferation in NATO.

Still, even for conservatives, the commitment to deterrence hinges upon Berlin's ability to make a positive impact on disarmament and arms control. In the parliamentary debate following NATO's support for the U.S. withdrawal from the INF Treaty, leading conservative defense committee member Roderich Kiesewetter replied to the repeated calls to end nuclear sharing: "(Socialists) demand the end of nuclear sharing. This is hard to imagine: Russia fills its arsenals with new nuclear missiles, denies transparency over its treaty compliance and in this situation, socialists ask

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67 Christoph Matschie. "Nur gemeinsam geht's," *Internationale Politik und Gesellschaft* (May 19, 2020); Nils Schmid, "Wir brauchen die Debatte über nukleare Teilhabe," *Der Tagesspiegel* (May 5, 2020).

68 Henning Otte, "Aussagen der SPD sind grob fahrlässig," Deutschlandfunk (May 4, 2020). https://www.deutschlandfunk.de/otte-cdu-zur-debatte-ueber-atomwaffen-aussagen-der-spd-sind.694.de.html?dram:article_id=475949. Accessed January 19, 2021.

that NATO clears out its shelves. What type of disarmament debate is this in which one side rearms and the others disarms? Unilateral disarmament has never been a first step to peace, but also not unilateral rearmament. What this is about is reciprocal disarmament. That is the position of the CDU/CSU."[69]

The government will only procure a small fraction of the Eurofighters in the current election period. Whether and how Germany will replace the DCA is a decision to be made by 2022–2023; hence, in the coming election period. A review of the arguments made in favor and in opposition to continued nuclear hosting suggests that any future government involving at least one party of the political left (Social Democrats, Greens, or Socialists) will likely find itself in tough negotiations over the issue.

Missed Opportunity: What is Germany's Position on Nuclear Deterrence?

In the past six years, under the auspices of grand coalition governments, exchanges in parliament on matters of nuclear deterrence and disarmament largely followed a similar pattern. The left-wing opposition accused the government factions and the liberals of investing in NATO's deterrence measures at the expense of Germany's commitment to promote confidence-building and arms control, particularly in Europe. In turn, those supporting an increased German commitment to conventional and nuclear deterrence accused the opposition of disregarding Berlin's alliance commitment and failing to have a realistic view of Russia's capabilities and intentions. These largely ritualistic debates failed to address a number of questions when it comes to the future of NATO's nuclear deterrence policy and Berlin's attitude towards it.

First, parliamentarians have missed the opportunity to argue for more transparency about the military and political purpose of nuclear hosting. One will be hard-pressed to find MPs able and willing to explain the conditions in which forward-deployed nuclear weapons would be used and the ways these weapons add to the credibility of NATO's nuclear posture. Similarly, parliamentary discussions shed no conclusive light on the question of how continued German hosting grants Berlin a special say in nuclear matters. Opponents of nuclear sharing have argued that no palpable influence on U.S. nuclear policies and international arms control is evident. Supporters have replied that German influence is only limited to NATO's nuclear strategy but fail to explain in detail what this actually means. It remains largely unclear how Berlin desires to shape nuclear thinking within NATO and whether it has been successful in conveying its position.

Second, given this lack of specificity, Parliament fails to help clarify what the German position on nuclear deterrence, and U.S. nuclear strategy in particular, actually is. As observers have recently argued, Germany largely avoids a deterrence discussion. Supporters of nuclear hosting and nuclear deterrence are very keen to point out that the actual use of nuclear weapons is a very remote possibility. Nuclear weapons remain "political weapons." To what extent this view is compatible with

69 Speech by Roderich Kieswetter, "INF-Vertrag bewahren, Aufrüstung in Europa verhindern, Atomwaffen abziehen," Deutscher Bundestag, Proctol 19/78 (February 1, 2020), p9194.

recent changes in the U.S. Nuclear Posture Review and how these U.S. changes affect NATO's nuclear strategy remain largely untouched questions.[70]

Lastly, Parliament has repeated its view that deterrence and disarmament are the flip sides of the same coin. Yet, there is a dire lack of concrete proposals for ways that Berlin could advance both goals in the present transatlantic and European environments. Unless Parliament seeks to scrutinize the government over these points, its influence on the nuclear deterrence debate will remain limited.

Cultivating such an in-depth dialogue on matters of nuclear deterrence faces a number of difficulties. For one, in recent years, questions of nuclear deterrence have not been a top issue compared to other foreign policy questions, such as climate change or out-of-area operations. Regaining more detailed knowledge and political interest will take time. Especially when it comes to Germany's role in nuclear sharing, NATO's classification policies and corresponding classification by the German government have been an impediment to a more substantive discussion. Last but not least, conventional and nuclear deterrence are subject to discussion in three separate parliamentary committees. While this setup certainly has the benefit of bringing pertinent questions of nuclear deterrence to the attention of a larger number of parliamentarians, it also leads to a certain compartmentalization that obstructs the view of what Germany's role and position should be on NATO's nuclear deterrence and how concrete steps towards arms control and disarmament can be achieved. Overcoming some of the taboos and blind spots associated with nuclear deterrence and its relations to arms control efforts is of paramount importance as Berlin finds itself in a rapidly changing security environment.

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70 Peter Rudolf, "Deutschland, die NATO, und nukleare Abschreckung," Stiftung Wissenschaft und Politik, SWP Studie No. 11 (2020). https://www.ssoar.info/ssoar/bitstream/handle/document/68188/ssoar-2020-rudolf-Deutschland_die_Nato_und_die.pdf?sequence=1&isAllowed=y&lnkname=ssoar-2020-rudolf-Deutschland_die_Nato_und_die.pdf. Accessed January 19, 2021. For a detailed review on the nascent debates on some strategic nuclear policy issues, see Ulrich Kühn and Tristan Volpe, "Germany's Nuclear Education: Why a Few Elites Are Testing a Taboo," *The Washington Quarterly* 40, no. 3 (2017), p7–27; Oliver Meier, "Why Germany won't build its own nuclear weapons and remains skeptical of a Eurodeterrent," *Bulletin of the Atomic Scientists* 76, no. 2 (2020), p76–84.

The Dutch Debate: Activism vs. Pragmatism
Michal Onderco

Introduction

Since the Cold War period, the United States has deployed tactical nuclear weapons in Europe. According to the 2018 Nuclear Posture Review, "their forward presence contributes significantly to the deterrence of potential adversaries and the assurance of allies."[71] The forward deployment of these weapons is codified in the so-called nuclear sharing arrangements. According to William Alberque, head of the Arms Control and Coordination Section in the Political Affairs and Security Policy Division at NATO, "the weapons were deployed under positive U.S. control and custody, with the agreement of the host nation, and releasable by the President of the United States to the NATO Supreme Allied Commander (who is always an American citizen to maintain U.S. chain-of-authority) for employment in the case of war."[72] The Netherlands has been a participant in NATO's nuclear strike mission, and provides dual-capable aircraft (DCA) designated for the delivery of the forward-deployed U.S. tactical nuclear weapons.[73]

This paper will review the domestic nuclear weapons debates in the Netherlands, with a particular focus on civil society and parliamentary debates. Dutch civil society organizations active on this issue include primarily activist disarmament NGOs and a small number of academics and think tank experts. The country's parliament is also active and remains rather skeptical of the merits of nuclear deterrence, and of the Dutch involvement in it.

According to Dutch scholar Jan van der Harst, the Dutch government sought to examine the potential of hosting U.S. nuclear weapons for both political and economic reasons.[74] In the early years of the Cold War, the Dutch feared becoming a "second-class ally" and were deeply distrustful of schemes for a European deterrent between France, Italy, and Germany, which they thought would open doors to French hegemony over Europe. The obvious solution was to seek as close ties with the United States as possible. The potential stationing of U.S. nuclear weapons on Dutch soil was perceived as working towards cementing the relationship with Washington. At the same time, it provided an option to save on defense expenditures at a time when the

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71 U.S. Department of Defense, "Nuclear Posture Review" (February 2018), p48. https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF. Accessed January 19, 2021.

72 William Alberque, "The NPT and the Origins of NATO's Nuclear Sharing Arrangements," Ifri Proliferation Papers no. 57 (February 2017), p14.

73 Katarzyna Kubiak, "NATO's nuclear response to the INF Treaty violation," in: Andrea Gilli (Ed.), *Recalibrating NATO Nuclear Policy*, NATO Defense College, NDC Research Paper No. 10 (June 2020).

74 Jan van der Harst, "Kernwapens? Geen Bezwaar," *Transaktie* 26, no. 4 (1997), p295–517.

Dutch government was committed to rebuilding the armed forces after World War II, but faced economic headwinds.[75]

According to van der Harst, the strategic rationale was also clear: NATO's plan to defend Western Europe along the Rhine-IJssel line meant that the Netherlands would be divided in two during conflict. As a result, about two-thirds of the Netherlands would be left undefended from an invading Soviet army. This caused significant unease in The Hague. The potential deployment of nuclear weapons, therefore, was seen by the Dutch political and military elite as moving the battlefield away from the Netherlands towards Germany—where incoming Soviet forces would be engaged using nuclear weapons—thus making the country safe from nuclear fallout.

Yet the government—aware of strong antinuclear feelings among the Dutch, especially among civil society—has never revealed the extent of its support for nuclear sharing.[76] Parliament remains active on the issue of nuclear disarmament more broadly, and societal relevance drives continuing interest in nuclear disarmament.[77] Therefore, whenever the Dutch government approaches the issue, it talks of either supporting the "NATO nuclear task" or the "dual-capable aircraft."

Although the nature of the threat has changed since the end of the Cold War, some of the benefits for keeping the "NATO nuclear task" capability remain. This is particularly true with respect to the political benefit of being seen as a first-class NATO member with special responsibilities (and, presumably, rights) when it comes to the NATO nuclear mission.[78] The Dutch government also emphasizes that continuous participation in the NATO nuclear task brings tangible benefits to Dutch businesses and helps maintain niche expertise, such as the aerospace industry.[79] More fundamentally, however, the Dutch government considers the NATO nuclear deterrent as essential to the maintenance of European and Dutch security.[80]

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75 van der Harst, "Kernwapens? Geen Bezwaar."

76 Philip Everts, "Public Opinion on Nuclear Weapons, Defense, and Security: The Case of the Netherlands," in: Gregory Flynn and Hans Rattinger (Eds.), *The Public and Atlantic Defense* (Totowa, NJ: Rowman & Allanheld, 1985), p221–275; Ruud van Dijk and Joppe Schaaper, *The Inter-Church Peace Council and the Nuclear Arms Race*, NPIHP Research Updates (2015). https://www.wilsoncenter.org/publication/the-IKV-and-the-nuclear-arms-race. Accessed January 19, 2021.

77 Götz Neuneck, "European and German Perspectives," in: Tom Nichols, Douglas Stuart and Jeffrey D. McCausland (Eds.), *Tactical Nuclear Weapons and NATO* (Pittsburgh, PA: Strategic Studies Institute, 2012), p257–278.

78 Advisory Council on International Affairs, "Nuclear Weapons in a New Geopolitical Reality. An Urgent Need for New Arms Control Initiatives" (January 2019). https://www.advisorycouncilinternationalaffairs.nl/documents/publications/2019/01/29/nuclear-weapons-in-a-new-geopolitical-reality. Accessed January 19, 2021.

79 Government of the Netherlands, "Orders in the F-35 Programme (Jsf)" (2019). https://www.government.nl/topics/commissariat-for-military-production/orders-in-the-f-35-programme-jsf. Accessed January 19, 2021.

80 See, for example, statements about the relevance of nuclear deterrence and NATO nuclear umbrella in the letters from Minister of Foreign Affairs Stef Blok and Minister of Defense Ank Bijleveld to the House of Representatives. Tweede Kamer der Staten-Generaal, "Kabinetsreactie Op Aiv-Adviesrapport, Kernwapens in Een Nieuwe Geopolitieke Werkelijkheid," Brief Van De Ministers Van Buitenlandse Zaken En Van Defensie (2019). https://www.tweedekamer.nl/downloads/document?id=fb2b0d74-bbb3-4039-9fae-d5bbe764c341&title=Kabinetsreactie%20op%20AIV-adviesrapport%20%22Kernwapens%20in%20een%20nieuwe%20geopolitieke%20werkelijkheid%22.pdf. Accessed January 19, 2021; Tweede Kamer der Staten-Generaal, "Brief van de ministers van Buitenlandse Zaken en van Defensie" (2019) https://zoek.officielebekendmakingen.nl/kst-33783-31.html. Accessed January 19, 2021.

Civil Society: Loud NGOs and a Small Expert Community

The present activity of the Dutch disarmament NGOs is part of the historical peace movement that was active in the Netherlands during the Cold War.[81] Even though the activities of the peace movement decreased after the end of the Cold War, Dutch disarmament NGOs remain the most active organizations globally when it comes to the promotion of nuclear disarmament. At present, the loudest voice in the pack comes from PAX for Peace with its No Nukes team, which builds on the legacy of the Inter-church Peace Council and Pax Christi, two organizations dating back to the early years of the Cold War. The oldest voice comes from the Dutch Association for Medical Polemology (NVMP), the Dutch branch of the International Physicians for the Prevention of Nuclear War, the Dutch Red Cross, Dutch Humanist Association (HV), and religious representatives. In addition, a plethora of smaller NGOs and religious actors draw on the history of civil society involvement in favor of nuclear disarmament.

PAX draws on the history of the Inter-religious Peace Council (Interkerkelijk Vredesberaad, or IKV), the leading nuclear disarmament civil society actor in the Netherlands in the 1980s. IKV was the organization responsible for bringing half a million Dutch people to Malieveld, a park in The Hague, to protest against the deployment of U.S. cruise missiles in 1983. IKV merged with Pax Christi, a Catholic peace movement, in the early 2000s, and then changed its name to PAX a decade later in 2014.

The PAX No Nukes team is the group most present at the global level.[82] As a member of the International Campaign to Abolish Nuclear Weapons (ICAN), PAX No Nukes is a member of the global network of NGO activists against nuclear weapons. The No Nukes team also has a strong domestic footing. It was the leading force behind the citizens' initiative, which led to Parliament mandating Dutch participation in the Open-Ended Working Group on Nuclear Disarmament (OEWG) and the ban treaty negotiations. PAX No Nukes is also behind the campaigns such as Don't Bank on the Bomb, which aims to exert pressure on financial actors to divest from the nuclear weapon enterprise. PAX claims credit for the divestment by ABP, the Dutch civil sector pension fund—one of the largest pension funds in the world—as well as by the pension fund of the Dutch railways, although it has never been credited by these institutions.[83]

PAX also has an active youth outreach program, something other nuclear-focused NGOs lack. It is particularly active among students at Dutch universities; it runs a Nuclear Diplomacy Crash Course, for example, whereby students participate in an NPT

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81 Hanspeter Kriesi and Philip van Praag Jr, "Old and New Politics: The Dutch Peace Movement and the Traditional Political Organizations," *European Journal of Political Research* 15, no. 3 (1987), p319–346; Thomas R Rochon, *Mobilizing for Peace: The Antinuclear Movements in Western Europe* (Princeton, NJ: Princeton University Press, 2014).

82 It also receives the most funding. The humanitarian disarmament program of PAX, for example, has an annual budget of between €1.5 – 2 million. See PAX, "Annual Report" (2018). https://www.paxforpeace.nl/media/files/pax-annual-report-2018.pdf. Accessed January 19, 2021; PAX, "Annual Report" (2019) https://www.paxvoorvrede.nl/media/files/pax-annual-report-2019.pdf. Accessed January 19, 2021.

83 PAX No Nukes, "Largest Dutch Pension Fund Abp to Divest from Nuclear Weapons" (2018). https://nonukes.nl/largest-dutch-pension-fund-abp-divest-nuclear-weapons/. Accessed January 19, 2021.

Preparatory Committee (PrepCom) and can undertake an internship with PAX. While the activism of PAX is undertaken today within the secular language of the humanitarian impacts and financial costs of nuclear weapons, the organization still enjoys its connection with the Dutch Council of Churches (Raad van Kerken).

Other members of the Dutch NGO community are much smaller. The Dutch Red Cross enjoys strong legitimacy generally afforded to the Red Cross as an impartial guardian of international humanitarian law.[84] Other NGOs draw mainly on their historical legacies (such as the NVMP or the HV). While these organizations regularly organize events, their supporters—and representatives—often represent older generations.

The loud public voice of NGOs is only weakly balanced by a much smaller think tank and academic presence in the debate. As the list of speakers in the summer 2019 parliamentary hearing shows, the number of independent experts on the issue of nuclear weapons in the Netherlands is fairly limited—there is a long-running joke that the community could meet for lunch at a small table. Aside from Sico van der Meer at the Clingendael Institute and Niels van Willigen at Leiden University, very few experts contribute to the public debate. These contributions are often factual and related to numerous developments in the world of nuclear weapons—for example, the North Korean nuclear program or developments in Russia.

Civil society in the Netherlands is divided among the activists who are happy for the country to take unilateral steps towards disarmament and believe this might have broad consequences for the world at large, and the hesitant expert group, which believes that the nuclear superpowers need to begin the steps towards nuclear disarmament. The Dutch Parliament's view is much closer to the activists, while the view of the executive branch is closer to that of the experts.

Parliament: Does Anyone Believe in Nukes?

Given the involvement of Dutch NGOs in the nuclear field, as well as the broad societal support for the goals of nuclear disarmament,[85] the Dutch Parliament has been active on the issue as well. The following analysis provides an overview of the most recent developments. The present activities of Parliament are largely centered around two topics: the future of the Dutch "nuclear task" within NATO as well as the Dutch participation in the TPNW. As might be expected, the two are interconnected.

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84 For a critical view, see Page Wilson, "The Myth of International Humanitarian Law," *International Affairs* 93, no. 3 (2017), p563–579.

85 Sadly, the last scientific surveys of Dutch public opinion about nuclear weapons were done in mid-1980s by Philip Everts, see Philip Everts and C.H.J. Vanecker, *Buitenlandse Politiek in De Nederlandse Publieke Opinie*, 1975–1984 (Den Haag: Instituut Clingendael, 1985); Philip Everts, *Public Opinion on Nuclear Weapons, Defense, and Security: The Case of the Netherlands*, in: Gregory Flynn and Hans Rattinger (Eds.), *The Public and Atlantic Defense* (London: Croom Helm, 1985). Dutch disarmament NGOs regularly conduct surveys, but due to the lack of information about the sampling, questions, and other attributes, it is impossible to evaluate their accuracy. Fabricio Fialho and Benoit Pelopidas have recently conducted several limited surveys in their cross-national work, see Fabricio M. Fialho and Benoit Pelopidas, "Le Pape François Peut-Il Influencer L'opinion Sur La Question Des Armes Nucléaires?," The Conversation (2019). https://theconversation.com/le-pape-francois-peut-il-influencer-lopinion-sur-la-question-des-armes-nucleaires-112175. Accessed January 19, 2021. Whatever the drawbacks of the existing surveys, it is unlikely that the general message—that the majority of the Dutch citizens are opposed to nuclear weapons—is wrong.

The discussion about the participation in the NATO nuclear task focuses on the Dutch possession of the dual-capable F-16 fighter jets to be replaced in the future by the F-35 Joint Strike Fighter (the delivery of the first F-35s started in 2019, and the currently purchased jets should be delivered by 2026). With the exception of the liberal People's Party for Freedom and Democracy (VVD) and the populist Party for Freedom (PVV), all other Dutch parties have flirted with unilateral nuclear abolition in recent years.

The TPNW and Unilateral Disarmament

Participation in the TPNW has been one of the major ways in which the Dutch Parliament has shaped the nuclear disarmament agenda. In 2015, a motion was passed to compel the government to substantively contribute to the international negotiations on the TPNW.[86] While members' motions are not legally binding, they carry substantive political weight. This particular motion, submitted by Sjoerd Sjoerdsma of the liberal Democrats 66 party, led the Dutch government to participate in the OEWG, organized in follow-up to the UN General Assembly Resolution adopted in 2015.

Sjoerdsma's motion also gave momentum to NGOs to push for Dutch participation in the ban treaty. The fruits of this impetus materialized soon. In the summer of 2015, PAX, together with the Dutch Red Cross and the socially responsible ASN Bank, led the effort to collect signatures under the so-called "citizen initiative" to ban nuclear weapons in the Netherlands.[87] At the end of September 2015, the NGO submitted the proposal to the Dutch Chamber of Representatives (Tweede Kamer) with 45,608 signatures. The proposal noted the humanitarian risks associated with nuclear use and the risks of accidental use. The report clearly stated[88] that banning nuclear weapons and their stationing in the Netherlands would not have any negative consequences for the Dutch standing within NATO.

In line with the Dutch parliamentary procedure, the Dutch government submitted a response in February 2016.[89] The government welcomed the citizens' involvement and appreciated the opportunity provided by the OEWG to push for new measures in relation to nuclear disarmament. The letter also mentioned, however, that the momentum will be there "only if the participants remain ready [for dialogue] and adopt a constructive attitude."[90] The government also highlighted that any unilateral steps

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86 Tweede Kamer der Staten-Generaal, "Nucleaire Ontwapening En Non-Proliferatie. Motie Van Het Lid Sjoerdsma [33.783, Nr 19]" (2015). https://zoek.officielebekendmakingen.nl/kst-33783-19.html. Accessed January 19, 2021.

87 PAX No Nukes, "Verbied Kernwapens in Nederland. Voorstel Aan De Tweede Kamer. Burgerinitiatief Teken Tegen Kernwapens [Bijlage Bij Kamerstuk 34419 Nr 1]" (2016). https://zoek.officielebekendmakingen.nl/blg-688950. Accessed January 19, 2021.

88 Ibid.

89 Tweede Kamer der Staten-Generaal, "Burgerinitiatief Teken Tegen Kernwapens. Brief Van De Minister Van Buitelandse Zaken [34419, Nr 2]" (2016). https://zoek.officielebekendmakingen.nl/kst-34419-2.html. Accessed January 19, 2021.

90 Tweede Kamer der Staten-Generaal, "Burgerinitiatief Teken Tegen Kernwapens. Brief Van De Minister Van Buitelandse Zaken [34419, Nr 2]."

would have consequences for NATO as a whole and Dutch participation in the different arms control mechanisms, such as the NPT, the Non-Proliferation and Disarmament Initiative (NPDI), the International Partnership for Nuclear Disarmament Verification (IPNDV), and the Fissile Material Cut-off Treaty (FMCT) talks.

The mandatory follow-up parliamentary debate in April 2016 pitted proponents and opponents of a unilateral ban against each other. The opponents, primarily drawn from the ruling liberal People's Party for Freedom and Democracy (VVD) as well as from the populist Party for Freedom (PVV), argued primarily that while nuclear disarmament is desirable and that the Dutch government should continue its involvement in the issue, isolated action without cooperation with other alliance partners will lead to isolation. "An isolated position only causes the rest to ignore you," said Han ten Broeke, VVD's foreign affairs spokesperson.[91] The proponents, drawn primarily from the other parties including the Labor Party (PvdA), a coalition party that held the Foreign Ministry, highlighted the risks associated with nuclear weapons and the moral pressure emanating from support for the OEWG. Harry van Bommel of the Socialist Party argued:

"The idea seems that as long as Russia does not disarm, the United States and NATO should not be expected to disarm unilaterally. On [this point], the Socialist Party is much more in favor of the position of the Secretary-General of the United Nations, Ban Ki-moon, whom we received in the House of Representatives last week. He urges everyone to be the first to take steps and not wait for others to start disarming. If they take the lead themselves, others will follow, said Ban Ki-moon."[92]

As a result, the debate prompted filing of 13 motions by the MPs, 11 of which pushed for unilateral steps or urgent negotiations on ceasing the Dutch participation in the NATO nuclear task. One even pushed for the Dutch government to deliver a concrete time plan for complete nuclear disarmament.[93] Only two took a position in favor of the continuous participation in the NATO nuclear task.[94]

Of the 13 motions, four were adopted, mostly with the votes of the VVD and PVV voting against. However, the motions calling for immediate unilateral disarmament motions put forward by the Socialist Party were defeated. Parliament adopted the following (nonbinding) motions:

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91 Tweede Kamer der Staten-Generaal, "Burgerinitiatief Teken Tegen Kernwapens. Plenair Debat" (2016). https://zoek.officielebekendmakingen.nl/h-tk-20152016-82-4.html. Accessed January 19, 2021.

92 Tweede Kamer der Staten-Generaal, "Burgerinitiatief Teken Tegen Kernwapens. Plenair Debat."

93 Tweede Kamer der Staten-Generaal, "Motie Van Het Lid Van Tongeren over Een Stappenplan Naar Algehele En Complete Nucleaire Ontwapening" (2016). https://www.tweedekamer.nl/kamerstukken/detail?id=2016Z08722&did=2016D18006. Accessed January 19, 2021.

94 All motions can be found here: Tweede Kamer der Staten-Generaal, "Moties ingediend bij het Burgerinitiatief Teken tegen kernwapens" (2016). https://www.tweedekamer.nl/kamerstukken/stemmingsuitslagen/detail?id=2016P07590. Accessed January 19, 2021.

- To make all bilateral agreements related to the "nuclear weapons task within the NATO context and the one squadron of F-16s charged with this task" as well as to the "physical implementation of the placement and maintenance of these nuclear weapons" accessible to the House.[95]
- To make use of the moment of "undesired modernization of nuclear weapons in Europe" to push for global nuclear disarmament.[96]
- To participate in the OEWG and encourage other NATO states to do the same.[97]
- To cooperate with the United States to phase out the Dutch nuclear weapons task.[98]

In August 2016, the Dutch government, along with other NATO countries, voted against the start of negotiations on an international legal instrument to ban nuclear weapons. When pressed to explain this vote, the government maintained that holding the negotiations in the absence of nuclear weapons possessors—in the way proposed by the OEWG—was against the Dutch nonproliferation policy of the last quarter of the century. The government announced that it was in favor of a step-by-step approach, which did not appease the chamber.[99]

To a large degree, parliamentary pressure on the government is responsible for the government's decision to participate in the ban treaty negotiations in the spring and summer of 2017. The Netherlands was the only NATO country that took part in these negotiations and the only one that voted against the draft of the treaty that was produced at the end.[100]

The story of the citizens' initiative is often seen as a great success by the Dutch NGO community, although it highlights the limits of the debate. While the initiative had a much broader goal—similar to the provisions of the TPNW—the parliamentary discussion was limited to the Dutch participation in the NATO nuclear weapons task.[101] The proponents of ending the Dutch participation have argued that such

95 Tweede Kamer der Staten-Generaal, "Motie Van De Leden Sjoerdsma En Van Bommel over Inzage in De Bilaterale Verdragen Tussen De Vs En Nederland" (2016). https://www.tweedekamer.nl/kamerstukken/detail?id=2016Z08725&did=2016D18012. Accessed January 19, 2021.

96 Tweede Kamer der Staten-Generaal, "Motie Van De Leden Sjoerdsma En Servaes over Een Impuls Aan Wereldwijde Nucleaire Ontwapening" (2016). https://www.tweedekamer.nl/kamerstukken/detail?id=2016Z08726&did=2016D18014. Accessed January 19, 2021.

97 Tweede Kamer der Staten-Generaal, "Motie Van Het Lid Servaes C.S. Over Doeltreffende Maatregelen Om Te Komen Tot Een Kernwapenvrije Wereld" (2016). https://www.tweedekamer.nl/kamerstukken/detail?id=2016Z08727&did=2016D18016. Accessed January 19, 2021.

98 Tweede Kamer der Staten-Generaal, "Motie Van Het Lid Voordewind over Het Gefaseerd Afstoten Van De Nederlandse Kernwapentaak" (2016). https://www.tweedekamer.nl/kamerstukken/detail?id=2016Z08729&did=2016D18018. Accessed January 19, 2021.

99 Tweede Kamer der Staten-Generaal, "Algemene Vergadering Der Verenigde Naties [Verslag Van Een Schriftelijk Overleg] [26.150, Nr 156]" (2016). https://zoek.officielebekendmakingen.nl/kst-26150-156.html. Accessed January 19, 2021.

100 For the discussion of the Dutch position at the negotiations, see Ekaterina Shirobokova, "The Netherlands and the Prohibition of Nuclear Weapons," *The Nonproliferation Review* 25, no. 1–2 (2018), p37–49.

101 Tweede Kamer der Staten-Generaal, "Burgerinitiatief Teken Tegen Kernwapens. Plenair Debat" (2016). https://debatgemist.tweedekamer.nl/debatten/burgerinitiatief-teken-tegen-kernwapens-0. Accessed January 19, 2021.

steps would not endanger the Dutch standing within the alliance, but they would substantively contribute to global nuclear disarmament.

The government put a damp cloth on such enthusiasm. Their response in multiple rounds of debates related to the citizens' initiative has highlighted the limits of the Dutch ability to effect change when it comes to global nuclear disarmament. Coming from the traditional middle-power perspective, the Dutch government, in its letters to the House of Representatives, consistently argued that participation through multilateral organizations is the most fruitful way to advance global nuclear disarmament—while highlighting the geopolitical difficulties related to nuclear disarmament in Europe. The position of the then-minister Bert Koenders is also curious; he was tasked with defending a government policy in the parliament against his own PvdA. The irony of this constellation was not lost on domestic observers.

Post-Ban Treaty Activity

Yet, the Dutch rejection of the ban treaty did not mean the end to the Dutch Parliament's zeal for disarmament. Since 2018, Parliament has passed nine motions on nuclear disarmament, including:

- calls for the government to develop a strategy to promote nuclear disarmament worldwide[102]
- a study on the compatibility of the TPNW with the existing international and domestic legal obligations in the Netherlands[103]
- calls for the government to save the INF Treaty "with all means necessary" and to prevent any deployment of new nuclear weapons to Europe[104]

In March 2018, in light of the ongoing discussions, the Dutch government requested an advisory report from the Advisory Council for Foreign Relations (AIV) about the role of nuclear weapons in the future. The report was delivered in January

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102 Tweede Kamer der Staten-Generaal, "Internationale Veiligheidsstrategie. Motie Van Het Lid Sjoersma C.S. [33.694, Nr. 15]" (2018). https://zoek.officielebekendmakingen.nl/kst-33694-15.html. Accessed January 19, 2021; Tweede Kamer der Staten-Generaal, "Nader Gewijzigde Motie Van Het Lid Ploumen C.S. Over Alomvattende En Verifieerbare Uitbanning Van Kernwapens (T.V.V. 33694-32)" (2018). https://www.tweedekamer.nl/kamerstukken/moties/detail?id=2018Z21524&did=2018D55351. Accessed January 19, 2021.

103 Tweede Kamer der Staten-Generaal, "Motie Van Het Lid Voordewind over Draagvlak Voor Het Vn-Verdrag" (2018). https://www.tweedekamer.nl/kamerstukken/detail?id=2018Z21147&did=2018D54556. Accessed January 19, 2021.

104 Tweede Kamer der Staten-Generaal, "Motie Van Het Lid Voordewind C.S. Over Behoud Van Het Inf-Verdrag" (2018). https://www.tweedekamer.nl/kamerstukken/detail?id=2018Z21146&did=2018D54555. Accessed January 19, 2021; Tweede Kamer der Staten-Generaal, "Moties Ingediend Bij Het Vao Navo Defensie Ministeriële" (2019). https://www.tweedekamer.nl/kamerstukken/stemmingsuitslagen/detail?id=2019P02181. Accessed January 19, 2021; Tweede Kamer der Staten-Generaal, "Motie Van Het Lid Van Ojik C.S. Over Pogingen Om in De Komende 100 Dagen Het Inf-Verdrag Te Redden" (2019). https://www.tweedekamer.nl/kamerstukken/moties/detail?id=2019Z08532&did=2019D17362. Accessed January 19, 2021; Tweede Kamer der Staten-Generaal, "Gewijzigde Motie Van Het Lid Sjoerdsma C.S. Over Voorkomen Dat Er Inf-Raketten in Europa Geplaatst Worden (T.V.V. 33694-42)" (2019). https://www.tweedekamer.nl/kamerstukken/moties/detail?id=2019Z12089&did=2019D24912. Accessed January 19, 2021.

2019.[105] While the report is not an official document, AIV's reports enjoy broad legitimacy and high regard. In the summer of 2019, the Foreign Affairs Committee of the Parliament also held a public hearing about the advisory report. The Committee invited representatives of the NGO community, as well as a number of Dutch and international experts, to discuss the report and the future direction of Dutch nuclear policy. Unsurprisingly, the NGO representatives were strongly in favor of unilateral disarmament while the experts highlighted the difficulties related to the international security environment, as well as the complications stemming from the limited power held by the Netherlands to actually affect change in the nuclear world.[106]

The public debate was followed by a parliamentary debate with the Ministers of Foreign Affairs and Defense. During this debate, the MPs from the Green Left, Labor Party, and the Socialist Party pronounced themselves clearly against continuing the nuclear task in the Netherlands. On the other hand, the liberal VVD, leading the current coalition and currently holding the foreign ministry portfolio, took the position that the existence of nuclear weapons is a reality, as is the fact that disarmament cannot happen overnight.[107] Interestingly, however, the D66, a liberal party that earlier pushed for numerous unilateral steps but is now in the government, recognized that the current security situation makes unilateral steps difficult.

Dual-Capable Aircraft

Nuclear disarmament and nuclear deterrence are raised frequently in the framework of the debate over the F-16 fighter jets and their replacement. These fighter jets have a nuclear task and are dual-capable—something to which the Dutch Parliament has repeatedly objected. In 2014, the Parliament passed a motion, proposed by Socialist Party member Jasper van Dijk, that called for the prohibition of the means of delivery of nuclear weapons in the replacement of the F-16 fighter jets. While the Parliament has been outspoken on this issue, the current plans of the government are for the F-35s to have a nuclear mission, a view supported in the AIV report. The discussion remains sensitive, and the NGOs continue to raise this issue.

The sensitive nature of the F-16 issue was highlighted after the popular television documentary series Zembla aired an episode called "Target Volkel" ("Doelwit Volkel"), which dealt with the associated uncertainties related to the operational

105 Advisory Council on International Affairs, "Nuclear Weapons in a New Geopolitical Reality. An Urgent Need for New Arms Control Initiatives."

106 For the list of speakers as well as their position papers, see Tweede Kamer der Staten-Generaal, "Hoorzitting / Rondetafelgesprek: Kabinetsreactie Op Aiv-Advies Inzake Kernwapens" (2019). https://www.tweedekamer.nl/debat_en_vergadering/commissievergaderingen/details?id=2019A02694. Accessed January 19, 2021.

107 Tweede Kamer der Staten-Generaal, "Verslag Van Een Algemeen Overleg, Gehouden Op 29 Januari 2020, over Kernwapenbeleid [33.783 Nucleaire ontwapening en non-proliferatie]" (2020). https://www.tweedekamer.nl/debat_en_vergadering/commissievergaderingen/details?id=2020A00087. Accessed January 19, 2021. Liliane Ploumen, a Labour Party MP and the former minister of development assistance, called this view "childish."

considerations of potentially using tactical nuclear weapons in wartime.[108] One week after the episode aired, members of the House of Representatives, Martijn Van Helvert (Christian–Democratic Appeal, a coalition party), Sjoerd Sjoerdsma (D66, also a coalition party), and Bram Van Ojik (Green Left, an opposition party), as well as Sadet Karabulut (Socialist Party, opposition) petitioned the Minister of Foreign Affairs and the Minister of Defense to provide more transparency related to Dutch participation in NATO nuclear sharing. The government, again, hesitated to provide any further information, arguing that doing so would go against alliance commitments and associated legal obligations.[109]

There is no doubt that NGOs, in cooperation with more left-wing parties within the Parliament, are happy to push for unilateral steps on nuclear disarmament, including removal of the nuclear task capability from the Dutch squadron of F-16s (and the future squadron of F-35s). The Advisory Report expressed that if the Netherlands was to do so, other NATO members closer to Russia could become interested in picking it up. Such a step would, according to AIV, be "interpret[ed] as a serious provocation" by Russia.[110] As seen from The Hague, unnecessarily irking the Russians would not contribute to peace and security. The contribution to the NATO nuclear task is therefore seen as the lesser of two possible evils. The Dutch government, in its own reaction to the report, adds that thanks to Dutch participation in the NATO nuclear task, the country "more forcefully and more effectively perform[s] in the field of arms control."[111]

Although the next elections are scheduled for March 2021, it is not likely that the future government would reverse the policy on F-35s. First, it might be too late to reverse some of the technical specifications, which might be, by then, negotiated and paid for. Second, the case of the former Labor Party foreign minister Koenders shows that even representatives of the abolitionist parties moderate their position once in government. And third, the Dutch government is unlikely to be the first one to reverse nuclear sharing policy (from among the NATO countries). At the same time, external developments (e.g., ending nuclear sharing in other NATO countries in Europe, or difficulties within NATO) might prompt revisiting this policy.

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108 Zembla, "Doelwit Volkel" (November 8, 2019). https://www.bnnvara.nl/zembla/artikelen/doelwit-volkel. Accessed January 19, 2021.

109 Tweede Kamer der Staten-Generaal, "Vragen Van De Leden Van Helvert (Cda), Sjoerdsma (D66) En Van Ojik (Groenlinks) Aan De Ministers Van Defensie En Van Buitenlandse Zaken over De Zembla-Uitzending «Doelwit Volkel» (Ingezonden 21 November 2019). Antwoord Van Minister Blok (Buitenlandse Zaken) Van Minister Bijleveld-Schouten (Defensie) (Ontvangen 6 Januari 2020)" (2019); Tweede Kamer der Staten-Generaal, "Vragen Van Het Lid Karabulut (Sp) Aan De Ministers Van Buitenlandse Zaken En Van Defensie over Nederlands Vetorecht in Geval Van Inzet Kernwapens (Ingezonden 21 November 2019). Antwoord Van Minister Blok (Buitenlandse Zaken) Van Minister Bijleveld-Schouten (Defensie) (Ontvangen 6 Januari 2020)" (2019).

110 Advisory Council on International Affairs, "Nuclear Weapons in a New Geopolitical Reality. An Urgent Need for New Arms Control Initiatives."

111 Tweede Kamer der Staten-Generaal, "Kabinetsreactie Op Aiv-Adviesrapport Kernwapens in Een Nieuwe Geopolitieke Werkelijkheid [Brief Van De Ministers Van Buitenlandse Zaken En Van Defensie]," p9.

Conclusion

In the domestic debates about nuclear weapons and deterrence in the Netherlands, one can quickly note a certain tension between the activism present in a large part of the population (civil society and political parties), and the pragmatism and deterrence thinking present in the expert community and government.

The parliamentary debate in the Netherlands is similar to the debate in Germany, as identified by Pia Fuhrhop in this volume. While the abolitionist camp is small in Germany, this camp is rather large in the Netherlands. At the same time, the proponents of NATO's nuclear sharing arrangements fall between the uneasy progressive and the supporter groups. As in Germany, publicly defending Dutch participation in nuclear deterrence is not easy since the general public is opposed to nuclear weapons.

The arguments levelled by the activist NGOs and many parliamentary parties may appear rather rosy-eyed and optimistic to experts at first sight. While numerous discussions are held in the Parliament and NGOs are active in promoting their message, there is very little public discussion about the benefits of nuclear deterrence for Dutch security, the value of the "nuclear task," or the role of nuclear weapons in military strategy. One of the reasons for this, however, is the absence of public discussions, at the expert level, about nuclear weapons and their purpose in the Netherlands. While it is obvious that there is a need to maintain certain military secrets, there is little discussion, for example, about the circumstances under which tactical nuclear weapons could be used, or what benefits they provide.

An argument could be made that participation in NATO's nuclear sharing arrangements is fundamentally a political statement by successive Dutch governments to the transatlantic alliance. If that is indeed the case, then the government might be well advised to be more outspoken about the benefits it believes to reap from Dutch participation in NATO. Not doing so exposes the government to attacks—from the opposition or civil society—in the long term. Furthermore, justifying government policy in the eye of the electorate is an important element of the accountability and legitimacy of democratic governments.

The current level of discussion—torn between popular activism and technocratic pragmatism—leads to the two sides talking past each other. While NGOs invest heavily in campaigns (like PAX's City Appeal, which is unlikely to change anything on the ground), the experts and government tiptoe around sensitive issues instead of making a broader statement. This policy is understandable, as nuclear weapons do not win votes easily. But the Netherlands is not unique in this regard. There is probably no country in the world—with the possible exception of the United States and Russia, and perhaps India under Modi—where nuclear weapons are a "vote winner." More government openness about the goals it pursues with (rather costly) public policies would go a long way. Shaping the discussion proactively could help the government shape the debate on its own terms, instead of being reactive.

In the current discussion, the policy agenda in the public sphere is carried by the NGOs and parliamentary abolitionists, which puts the government on the defensive. This defensive position makes the policy look less like a result of purposeful choices by successive Dutch governments. After all, there must be a series of good reasons—good in the minds of the Dutch civil servants and politicians—why participation in extended deterrence has been seen as a "good idea." In a country where all sorts of issues are being openly discussed in public, one would expect the government to be more proactive in its shaping of the discussion rather than always appearing caught off guard.

French Perspectives on Disarmament and Deterrence
Emmanuelle Maitre

Introduction

French nuclear policy has traditionally escaped domestic debates. Since President Charles de Gaulle, it has been seen as the ultimate prerogative of the head of state. Since the Socialist Party came to support the nuclear deterrent at the end of the 1970s, the political arena has been rather quiet on these issues. Deterrence strategy has therefore been crafted with little input from civil society or political parties, except on the issue of nuclear testing. The reduction of the French nuclear arsenal in the 1990s, for example, was decided by the top and followed security and budgetary considerations—it received little publicity at the time.

In recent years, there has been a visible effort to promote French involvement in disarmament efforts and to display its compatibility with deterrence. Contrary to the situation in the United Kingdom, it would be difficult to link this more active policy to domestic pressure. In France, parliamentarians rarely ask the government to pursue disarmament efforts. More generally, military nuclear issues are absent from political discussion and no political party emphasizes nuclear weapons as a key policy issue. In civil society and among activists, opposition to nuclear weapons is extremely limited and is largely obscured by the mobilization against civilian nuclear power. While it is frequently suggested that the public maintains a "consensus" on the nuclear issue,[112] this is probably overstated. More plausibly, there is a lack of active opposition and even lack of public interest in nuclear weapons. In combination, the influence of domestic drivers in framing nuclear policy is limited; French nuclear policy remains largely discreet, decided and implemented with little public scrutiny. Internal debates are more or less restricted to a small community of policymakers and experts, which generally focus on international trends, new military developments, and budgetary considerations.

A Strong Continuity in Deterrence Policy

The French position on deterrence is marked by an important degree of continuity. Changes since the end of the Cold War have been slow and measured, even if both the structure of its nuclear forces and doctrine have undergone adjustments to adapt to a radically transformed environment. In principle, the nuclear deterrent is seen as the ultimate guarantor of French sovereignty and independence, and it remains a priority mission. In many ways, it structures the organization of the armed forces

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112 Ministère de la Défense, "Baromètre externe 'Les Français et la Défense,' Results," IFOP, DICOD (May 2017). https://www.defense.gouv.fr/content/download/511567/8627064/La%20D%C3%A9fense%20dans%20l%27opinion%20des%20fran%C3%A7ais%202017.pdf. Accessed January 19, 2021.

and the acquisition of equipment. It also requires a significant budgetary effort.[113] To emphasize its importance, every French president since the 1980s has visited the nuclear forces and delivered a key speech on deterrence, emphasizing their ultimate decisionmaking authority on the use of nuclear weapons.

The key role of nuclear deterrence has also been regularly recalled in official documents. White papers, strategic reviews, and other declarations have reaffirmed the irreplaceable role of nuclear deterrence, even during periods when the nature of threats and priorities may have created pressures to reduce the resources dedicated to the nuclear mission.[114] However, the annexation of Crimea and the resurgence of territorial threats within the European space, as well as more competitive dynamics between major powers worldwide, have reemphasized the role and applicability of deterrence in the 21st-century security environment.

This consensus on the necessity of deterrence, however, does not exclude debates on its adaptation to the current environment. In his latest speech on deterrence at the Ecole Militaire in February 2020,[115] President Emmanuel Macron reiterated the main tenets of French policy but also tried to open the discussion. First, he emphasized the role of arms control for security and stability, adding that while France is not at a level where it can participate in arms reductions, it should, alongside other European partners, have a say in regional and global arms control discussions. Second, the President evoked the role that French nuclear forces can play for European security and invited European partners to join the discussion and potentially partake in some exercises.

While very conservative in doctrine and structure, deterrence in France has the ability to adapt to new challenges and environments. Moreover, the issue is increasingly considered in connection to disarmament and arms control commitments. As the Macron speech showed, France tries to balance deterrence and arms control, and demonstrate the implementation of its obligations under Article VI of the NPT.

Efforts in the Field of Disarmament Mostly Motivated by International Dynamics

France is often described as one of the most cautious of the NPT's five nuclear-weapons states on the question of disarmament. It has even been labelled as "the last to disarm."[116] Its public stance on the TPNW has renewed perceptions of Paris as

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113 The budget for nuclear weapons investment reached €4.6 billion in 2019. The allocation for 2020 is €8.16 billion, in anticipation of commencing operational development of the new generation of nuclear submarines. See Ministère de l'Économie, des Finances et de la Relance, "Présentation des Crédits et des Dépenses Fiscales" (2020). https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2020/pap/html/DBGPGMPRESCREDPGM146.htm. Accessed January 19, 2021.

114 Ministry of Defence, "Defence and National Security Strategic Review" (2017). https://www.defense.gouv.fr/english/dgris/defence-policy/revue-strategique/revue-strategique. Accessed January 19, 2021.

115 Emmanuel Macron, "Speech of the President of the Republic on the Defense and Deterrence Strategy," Elysée (February 7, 2020). https://www.elysee.fr/en/emmanuel-macron/2020/02/07/speech-of-the-president-of-the-republic-on-the-defense-and-deterrence-strategy. Accessed January 19, 2021.

116 Bruno Tertrais, The Last to Disarm? The Future of France's Nuclear Weapons, *The Nonproliferation Review* 14, no. 2 (July 2017).

the most intransigent P5 member.[117] The narrative used domestically and abroad in support of deterrence may even appear to contradict the ultimate goal of eliminating all nuclear weapons; this narrative assumes that a world free of nuclear weapons might be more dangerous than the current environment underpinning existing deterrence relationships.

France's caution in addressing nuclear disarmament can be explained by several factors. First, there is a desire to keep the disarmament debate connected to the security environment. According to Paris, the general security context, the risk of proliferation, and the remaining stockpiles of other weapons of mass destruction (WMDs) are threats that need to be addressed before further reducing nuclear stockpiles.[118] Second, France is generally anxious about any legal proceedings that may have an impact on its operations. Thus, France refuses to debate the humanitarian consequences of nuclear weapons to avoid questions about the legality of deterrence, specific doctrines, and practices. Finally, the official doctrine of the complete independence of the French forces and the absolute sovereignty of the President in any decision about nuclear weapons limit the ability of diplomats to commit to any disarmament process that could tie the hands of the head of state during a crisis.

Despite this often-reluctant posture and the doubts expressed about achieving a nuclear-free world, the French have an arguably commendable track record on disarmament. France reduced its nuclear arsenal by half in the 1990s and later entirely dismantled its ground-launch nuclear systems. It has cut its number of submarine platforms from six to four and air fighter squadrons from three to two. France has also dismantled its fissile material production facilities as well as its nuclear testing center.[119] In addition, it has made notable efforts to demonstrate transparency. In 2015, for example, President François Hollande disclosed—in unprecedented detail—the composition of the French arsenal,[120] that the budget allocated to nuclear forces is available online,[121] and that the doctrine is discussed

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117 Statement delivered by Yann Hwang, Permanent representative of France to the Conference on Disarmament in Geneva, within the framework of the debate on "Nuclear weapons" of the first committee of the 74th United Nations General Assembly in New York, October 22, 2019.

118 See, for example, Statement delivered by Yann Hwang, Ambassador, Permanent representative of France to the Third Preparatory Committee of the Nuclear Non-Proliferation Treaty Review Conference, Nuclear Disarmament, New York, May 2, 2019.

119 République Française, "What France achieved," La France et le Traité sur la non-prolifération des armes nucléaires (2020). https://www.francetnp.gouv.fr/what-france-achieved?lang=fr. Accessed January 19, 2021.

120 "Speech by the President of the French Republic on the Nuclear Deterrent," Istres (February 19, 2015). https://cd-geneve.delegfrance.org/Nuclear-weapons-statement-of-Mr-Francois-Hollande-in-Istres-on-the-19th-of. Accessed January 19, 2021.

121 Ministère de l'Économie, des Finances et de la Relance, "Présentation des crédits et des dépenses fiscales, Projet de Loi de Finances 2020, Autorisations d'Engagement, Mission Défense, Programme Equipement des Forces" (2020). https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2020/pap/html/DBGPGMPRESCREDPGM146.htm. Accessed January 19, 2021.

at the international level in NPT forums.[122] Paris increasingly realizes the importance of communicating its efforts more openly and being more positive about progress to date. This has led to a greater political involvement in disarmament initiatives. For instance, France is very outspoken about its support of the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Paris has also taken more efforts to communicate its disarmament policy in Paris, Geneva, and New York, and is an active member of the International Partnership for Nuclear Disarmament Verification (IPNDV). In 2019, France partnered with Germany on a multilateral verification exercise, dubbed NuDiVe.

France's incentives to work on disarmament are mostly derived from international concerns. First, France is interested in preserving a functional and effective nonproliferation regime. In particular, this means making sure that the NPT remains the cornerstone of international security and that its provisions are properly implemented and accompanied by a strong and relevant regime. As most countries emphasize the need to deliver concrete measures on all pillars of the Treaty (nonproliferation, disarmament, peaceful uses), French authorities recognize the importance of "delivering" on the disarmament objective. This has been visible in the transparency and openness efforts displayed in Geneva in February 2020. In anticipation of the NPT Review Conference, France organized a seminar open to civil society and a selection of nonnuclear weapon states.

France today describes its efforts with regards to disarmament as exemplary, with a special emphasis on the irreversible dismantlement of fissile material production facilities and the Pacific nuclear testing center. It also refers to the deep reductions made since the Cold War, as well as its diplomatic efforts to adopt a Fissile Material Cut-Off Treaty (FMCT) and for the entry into force of the CTBT. More recently, it has participated in initiatives on strategic risk reduction measures and nuclear disarmament verification.[123] For Paris, implementing these policies is consistent with ensuring the credibility of nuclear deterrence. France emphasizes the stabilizing role of deterrence in a contested security environment and underlines its compatibility with the NPT.[124]

In parallel, France also has to consider the issue of disarmament in a European context. As one of the European nuclear powers in NATO, and the only remaining nuclear weapon state in the European Union, France has an interest in preserving as much unity as possible on the continent on the question of nuclear deterrence. This is especially useful when dealing with key partners such as Germany. To limit confrontation with allies in Europe, France seems to be pursuing a double strategy. On the one hand, it slowly attempts to Europeanize the debate on nuclear deterrence and works to maintain unity on the relevance of preserving a nuclear deterrent in Europe.

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122 "Report submitted by France under actions 5, 20, and 21 of the Final Document of the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons," NPT/CONF.2015/10 (March 12, 2015).

123 See the official presentation of France's achievements in the field of disarmament: République Française, "French action on nuclear disarmament – Key figures" (2020). https://www.francetnp.gouv.fr/presentation-77. Accessed January 19, 2021.

124 Emmanuel Macron, "Speech of the President of the Republic on the Defense and Deterrence Strategy."

These efforts are evident by French insistence on NATO's nuclear role, its support for keeping U.S. nuclear weapons deployed in Europe, and its attempts to increase the knowledge of European partners on capabilities and doctrine—for instance, through visits of key installations.

On the other hand, Paris is aware of antinuclear public opinion in these countries and therefore tries to make some gestures to assuage the fears of pro-disarmament constituencies. This includes supporting arms control, engaging with nonnuclear weapon states and NGOs, promoting transparency on doctrines and arsenals, and participating in nuclear verification exercises. Cognizant of the challenges facing some NATO governments currently supportive of NATO nuclear policies but under domestic pressure to disarm, France recognizes the importance of efforts demonstrating the efficacy and soundness of step-by-step disarmament.

While France's deterrence policy puts emphasis on the notions of independence and national interests, its disarmament policy is in many ways driven by international concerns. Both largely escape domestic debates as neither the political sphere nor civil society play a big role in military nuclear issues. This situation is often explained by a "consensus" among French society on the role of deterrence. This consensus is likely shallow, and several factors may explain the lack of discussion on this topic at the domestic level.

A Question Absent from Political Discussion

The nuclear issue is basically absent from election campaigns today. This is mostly because nuclear issues are not a priority consideration for voters, but also because the main candidates generally share the same views on these issues and therefore have little incentive to differentiate themselves from their opponents. This may seem surprising given that recent presidents have had to make essential decisions on nuclear weapons, such as the investment in a new generation of nuclear submarines—one component of the French nuclear dyad.

During the 2017 presidential elections, the major candidates made infrequent references to military nuclear issues. For example, then-candidate Emmanuel Macron's En Marche party specified that if elected, Macron would proceed with "the modernization of the nuclear deterrent, guarantee of France's security. This effort will affect naval and airborne forces."[125] On the far right, Marine Le Pen (then Front National, now Rassemblement National) also committed to preserve and modernize all components of the French deterrent, with a commitment to raise the percentage of the GDP dedicated to defense. She insisted on the need to withdraw France from NATO's integrated military command and to forsake any project on European defense.[126]

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125 Emmanuel Macron, "La défense de la France: le prix de la liberté," *Revue Défense Nationale* 4, no. 799 (April 2017), p43–48.

126 Marine Le Pen, "Assurer la sécurité quotidienne de nos compatriotes et de nos territoires," *Revue Défense Nationale* 4, no. 799 (April 2017), p13–19.

On the mainstream right (Les Républicains), candidate François Fillon noted that "the era of nuclear weapons is not over, quite the contrary, it is getting more relevant." He promised to modernize strategic forces.[127] This position was also sustained on the mainstream left, with the Socialist Party declaring that "sustaining the nuclear deterrent is not in debate" and that it is key to "national independence."[128] The far left, however, is fragmented with different movements holding different views. Only La France Insoumise, led by Jean-Luc Mélanchon, and the ecologist party Europe Ecologie-Les Verts (EELV), led by Yannick Jadot in 2017, evoked the issue of nuclear weapons during the presidential campaign.

Jadot advocated unilaterally eliminating the ground and air components, even though the ground component was entirely dismantled in 1998, and he supported the negotiation and ratification of the TPNW.[129] He even went so far as to advocate for a referendum on nuclear disarmament.[130] Interestingly, the EELV is often allied with the Socialist Party (PS). In 2017, the two parties worked on a common platform: the PS agreed to concessions on EELV positions on civilian nuclear energy but retained its pronuclear deterrence stance. This suggests that the question of nuclear energy is deemed more sensitive and critical for Green-leaning politicians than the issue of nuclear weapons.

The biggest critic of France's official deterrence posture was Jean-Luc Mélenchon, leader of La France Insoumise. While he described deterrence as "an essential element of our protection" ensuring a "national potential of technological and industrial high-level expertise," he proposed withdrawal from NATO and was especially critical of the Alliance's missile defense investments. He also advocated, albeit fleetingly, for the elimination of the strategic air component.[131] However, this proposition did not appear in an official platform, only in a journal dedicated to military issues.[132]

Since the 2017 presidential elections, nuclear issues have been almost entirely absent from the political debate. The two parties most critical of French nuclear policies are extremely quiet on the topic. The official platform of La France Insoumise

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127 François Fillon, "L'Armée: un outil au service de la sécurité et de la diplomatie," *Revue Défense Nationale* 4, no. 799 (April 2017), p37–42.

128 Benoît Hamon, "L'action des Armées : sécurité nationale et stabilité internationale," *Revue Défense Nationale* 4, no. 799 (April 2017), p20–26.

129 "Présentation des premières mesures des écologistes pour l'élection présidentielle 2017," L'Écologie avec Jadot (January 11, 2017). https://eelv.fr/wp-content/uploads/2017/01/La-France-vive-proposition-de-Yannick-Jadot-et-des-ecologistes-pour-lelection-presidentielle.pdf. Accessed January 19, 2021.

130 Action des Citoyens pour le Désarmement Nucléaire, "Palmarès nucléaire des briguants de la République Pour une cartographie de la France militaro-politico-nucléaire" (January 18, 2017). http://www.acdn.net/spip/spip.php?article1052. Accessed January 19, 2021.

131 Jean-Luc Mélenchon, "Pour un nouvel indépendantisme français," *Revue Défense Nationale* 4, no. 799 (April 2017), p7–12.

132 Charlotte Girard answering to a questionnaire by the magazine Sciences et Avenir in the framework of the presidential elections: Charlotte Girard, "Réponse de Charlotte Girard," *Sciences et Avenir* (January 2017). https://avenirencommun.fr/app/uploads/2017/01/R%C3%A9ponse-JLM2017-Sciences-et-avenir-04032017.pdf. Accessed January 19, 2021.

does not mention deterrence or nuclear weapons. They have, however, detailed a plan to stop the use of nuclear energy. Similarly, the official documents and communiqués of the EELV only evoke the issue of civilian nuclear energy. Some party leaders have occasionally expressed support for disarmament, especially on social media, but this remains rare and indicates that it is not a strong priority.

As NGOs supporting the goal of disarmament remain mostly outside of political debates, there is very little opportunity for political leaders to reflect on the issue at all. The only exception to this relates to the recent ICAN efforts to collect the endorsement of city authorities. In August 2020, 25 French cities were signatories of the Cities Appeal, most notably Grenoble and Paris.[133] While Grenoble pressed the government to join the TPNW, Paris did not make a public appeal and the decision did not lead to any further discussions on disarmament.[134]

Limited Discussion on the Cost of Deterrence in Parliament

In recent years, the only political fora for discussing deterrence have been low-key debates on the defense budget. The French Parliament (National Assembly and Senate) is responsible for approving the annual budget, and since 2001, Parliament has increased authority to endorse funds for specific missions and programs.[135] That being said, the executive branch maintains strong leadership over defense and security issues, and the parliament has usually been very supportive of the policies advanced in these areas.

Today, discussions on defense budget laws are well-informed and well-documented. The defense committees produce detailed reports on the bills submitted by the Ministry of Armed Forces. Opposition to the proposals are extremely rare and the legislative branch is largely aligned on matters relating to security; the adoption of a three-year planning law of military spending in 2018, for example, led to only limited discussions. The only exceptions have come from Communist lawmakers (2% of the National Assembly), who have proposed several amendments to reduce nuclear weapons-related expenditures.[136] While no fundamental debate has taken place, the main parties have systematically rejected these propositions and have supported government efforts to modernize the French deterrent. The Communist group has since refused to vote for the budget allocated to nuclear forces. The other far-left

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133 ICAN, "Cities Appeal" (2020). https://cities.icanw.org/list_of_cities. Accessed January 19, 2021.

134 "Grenoble rejoint l'Appel des villes en faveur du Traité sur l'interdiction des armes nucléaires," Service Presse, Ville de Grenoble (July 19, 2019). https://www.grenoble.fr/538-espace-presse.htm?PST_CODE=PST_INVITATION. Accessed January 19, 2021.

135 In 2001, Parliament passed a new organic budget law, the Loi Organique relative aux Lois des Finances (LOLF), which granted greater parliamentary authority and oversight over government spending.
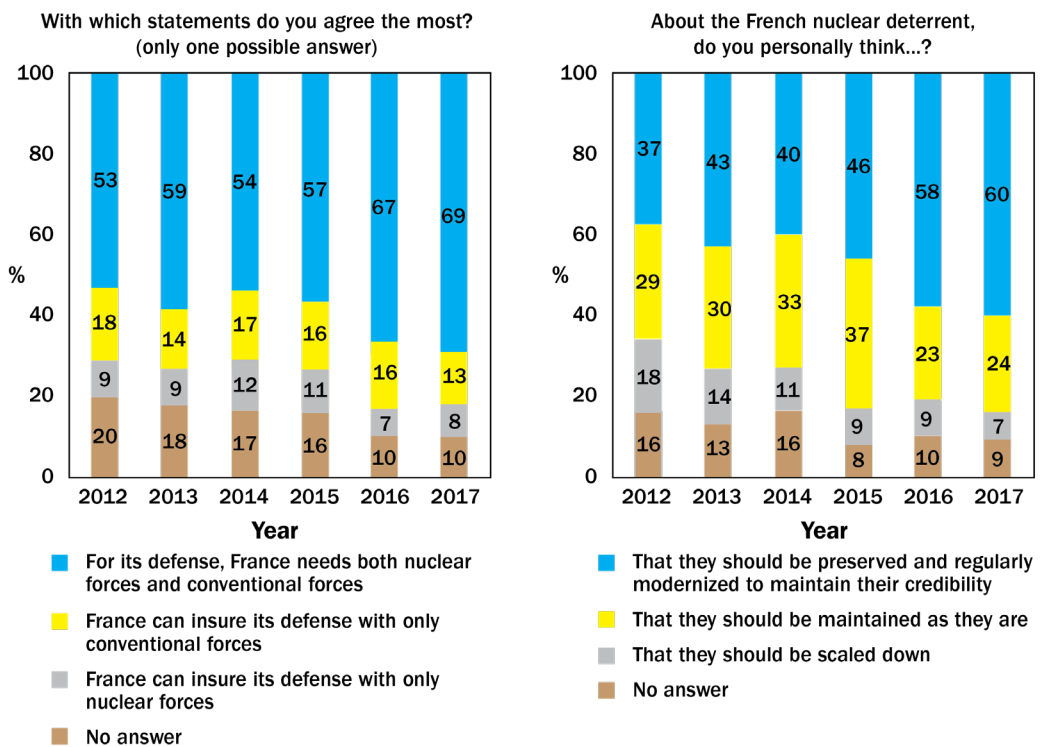
136 France, National Assembly, "Ordinary Session of 2017–2018, Parliamentary Debates, Second Session" (March 21, 2018). In particular, they proposed to reduce the cost of French modernization, suppress the airborne component, allow greater parliamentary authority on investment decisions, and review the doctrine linked to nuclear weapons. The underlying rationale for these proposals was the lack of independence of French security strategy, and a strong call to withdraw from NATO. See, for example: France, National Assembly, "Ordinary Session of 2017–2018, Parliamentary Debates, First Session" (October 30, 2019) and France, National Assembly, "Amendment N°II-630, PLF POUR 2020 – N°2272" (October 25, 2019).

group, La France Insoumise (3% of the National Assembly) has also called for a reduction of the budget of the airborne component and its gradual phase out.

French Public Opinion on Nuclear Weapons: "Consensus" or Lack of Interest?

The French Ministry of Defense commissions regular surveys on defense and security. Historical data shows an increase in support for the nuclear mission since 2012 (Figure 1), which coincides with the deterioration of relations with Russia and the growing support for the armed forces following, in particular, their role in fighting terror attacks in France and abroad. Among the latest consultations, in 2017, 72% of respondents supported maintaining the French deterrent, with 60% agreeing that it "had to be modernized to remain credible."[137]

Figure 1. Ministry of Defense Polls 2012–2017[138]

With which statements do you agree the most?
(only one possible answer)

- For its defense, France needs both nuclear forces and conventional forces
- France can insure its defense with only conventional forces
- France can insure its defense with only nuclear forces
- No answer

About the French nuclear deterrent, do you personally think...?

- That they should be preserved and regularly modernized to maintain their credibility
- That they should be maintained as they are
- That they should be scaled down
- No answer

Curiously, the same company commissioned by the Ministry of Defense [prominent French polling and market research company Institut français d'opinion publique (IFOP)] was also used by two disarmament advocacy groups. These polls found very

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137 This study was conducted with a panel of 1000 online respondents.

138 IFOP-DICOD, "Baromètre externe 'Les Français et la Défense,'" Results (May 2017). https://www.defense.gouv.fr/content/download/511567/8627064/La%20D%C3%A9fense%20dans%20l%27opinion%20des%20 fran%C3%A7ais%202017.pdf. Accessed February 9, 2021. Figure text translated from French.

different results. In 2015, the Action des Citoyens pour le Désarmement Nucléaire commissioned an online poll with two questions. The first asked respondents if they would "support the negotiation and ratification of a treaty banning nuclear weapons with an effective and mutual verification regime." Of those responding, 74% answered yes and 26% answered no. The second question asked respondents if they would favor the organization of a referendum on this issue; this gathered a 74% approval rating.[139] Similar figures were obtained in 2012.[140] In 2018, 67% of respondents indicated that France should commit to the TPNW in a new poll commissioned by the Catholic newspaper *La Croix* and the non-governmental organization (NGO) Mouvement de la paix. According to this survey, only 44% of the respondents were in favor of modernizing the nuclear deterrent (missiles and submarines).[141]

Figure 2. La Croix/IFPOP 2018 Survey[142]
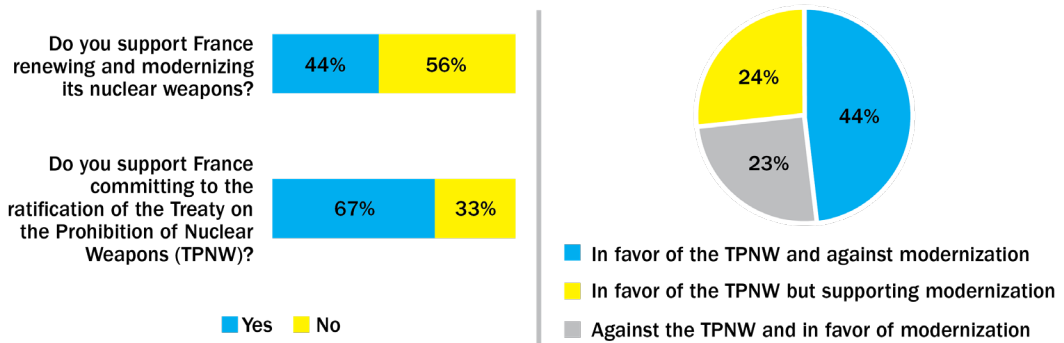
The contradictions of these figures, obtained through similar methodologies and by the same polling institute, demonstrate the difficulty of ascertaining French public opinion on nuclear weapons. These inconsistencies might be due to several factors, including biased question framing, acquiescence bias, a tendency to answer yes to a question, and a lack of representation among survey respondents. At the very least, these inconsistencies suggest that our understanding of French public opinion on nuclear weapons is inadequate, and further research is required to properly gauge these

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139 Jean-Marie Matagne, "Sondage de l'IFOP: Trois Français sur quatre veulent abolir l'arme nucléaire," Mediapart (October 20, 2015).

140 "Sondage exclusif «Election présidentielle: les Français et les dépenses militaires»," IFOP pour le Mouvement de la Paix (March 2012).

141 Laurent De Boissieu, "Les Français contre le nucléaire militaire," *La Croix* (July 4, 2018). https://www.la-croix.com/France/Securite/Francais-contre-nucleaire-militaire-2018-07-04-1200952564. Accessed January 19, 2021. Figure text translated from French.

142 Ibid.

opinions. Establishing a solid public consensus on the French nuclear arsenal would probably require a larger public debate and increased knowledge on the issues.[143]

The "French consensus," often praised by military officials, seems to be either nonexistent or mostly the fruit of a lack of opposition, which itself stems, in major part, from a lack of interest. Events organized on the topic only draw a very small specialized community, and publications of books, papers, or articles attract a limited readership. For some journalists, this lack of interest may be explained by the apparent remoteness of the danger (compared, for instance, to the fear of a nuclear accident in a nuclear reactor) and the absence of political division on the issue.[144] For others, military nuclear issues fail to capture the attention of the public since the termination of nuclear tests, which were a visual and controversial manifestation of the environmental cost of nuclear deterrence. Finally, other commentators suggest that journalists may be hesitant to criticize French nuclear policy in order to preserve their access to information in defense circles.[145]

That being said, the issue has nonetheless received increased visibility in the public sphere and in the media—several conferences and colloquiums have been organized but have ultimately failed to gain noticeable traction amongst the public and parliamentarians. Several books have been published, but generally reflect the official government positions.[146] The mainstream media have covered salient nuclear developments on Iran and North Korea, as well as fears of a new arms race between the United States and Russia. The adoption of the TPNW and Pope Francis' statements on nuclear disarmament were also reported. At the same time, the tone adopted by this coverage is usually neutral or skeptical, and only one activist defended the prodisarmament stance. By emphasizing the dangers of the current environment, these articles are consistent with a narrative underscoring the difficulty of imagining disarmament in the short term and the dangers of unilateral disarmament. This increase of discussion in the media has not politicized key decisions with respect to French nuclear modernization.

It is difficult to speculate how a frank and open public debate on nuclear deterrence in France may impact these trends. On the one hand, political consensus and the lack of public knowledge and interest might translate into the absence of opposition or

143 Clément Larrauri, The New Nuclear Order: "The French nuclear weapon as a structure of consensuses," Note de la relève stratégique, IRSEM (September 2014). https://www.defense.gouv.fr/english/irsem/publications/archives/notes-de-la-releve-strategique/notes-de-la-releve-strategique. Accessed January 19, 2021.

144 "La dissuasion nucléaire française en débat, Compte rendu du colloque organisé le 8 juin 2015 à la Maison de la Chimie," FRS, *Etudes & débats,* no. 2 (June 2015). https://www.frstrategie.org/evenements/08-06-2015-dissuasion-nucleaire-francaise-debat. Accessed January 19, 2021.

145 Emmanuelle Maitre, "Quel débat sur la dissuasion nucléaire en France?," *Bulletin* 39, Observatoire de la Dissuasion, FRS (January 2017). https://www.frstrategie.org/programmes/observatoire-de-la-dissuasion/quel-debat-sur-dissuasion-nucleaire-france-2017. Accessed January 19, 2021.

146 Bruno Tertrais, *La France et la Dissuasion nucléaire: concepts, moyens, avenir, La Documentation Française* (2017); Nicolas Roche, Pourquoi la Dissuasion, Presses Universitaires de France (2017); Nicolas Hautais (Ed.), *La France et l'Arme Nucléaire* (Paris: CNRS Editions, 2019).

lack of concern about the tenets of nuclear deterrence. On the other hand, there is a reluctance, particularly within the military, to draw public scrutiny to an issue which has so far been dealt with only at the highest level. It may indeed seem to some as an opening of Pandora's box, and an invitation for controversy where none exists.[147] The example of other European countries, where debates around the legitimacy and utility of nuclear deterrence is sometimes manipulated to promote other priorities (withdrawal from NATO, regional autonomy, "political scoring" against opponents in government) may also serve as a caution against opening this debate in the political arena. As it is, the "consensus" does not appear to be based on a very strong support. It may be weakened as important decisions need to be made in difficult fiscal times, if the international context continues to deteriorate, or in the advent of a nuclear incident.

A Small and Fragmented Antinuclear Community

Until 1996, many French antinuclear organizations working on military issues were primarily concerned with the cessation of nuclear testing in French Polynesia. In Papeete, protests took place regularly and increased sharply with the resumption of nuclear tests in 1995.[148] Led by Oscar Temaru of the pro-independence party Tavini Huiraatira, these protests were also the result of a crisis in the Polynesian social model that fueled anger among younger generations towards Paris.[149] Despite the continuous mobilization of local actors, the fight against the Polynesian nuclear tests gained greater media visibility thanks to the actions of Greenpeace—and the subsequent reactions of the French government.[150]

France's ratification of the CTBT and the dismantling of the nuclear test center in the Pacific marked both the ultimate success and the end of most activist efforts. Nuclear tests were such a visible element in their own right that they easily mobilized the media and public opinion. Multilateral disarmament, on the other hand, is unlikely to resonate or gain the traction enjoyed by anti-testing advocacy, which can campaign on very tangible health or environmental issues such as radiation-induced cancers or geological disruption to the atolls. There has been no significant movement on the issue of disarmament since 1996, and generational renewal has not taken place, with activists focusing on other issues such as ecology (particularly the fight against civilian nuclear power), international solidarity, and health.

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147 Clément Larrauri, "The New Nuclear Order: The French nuclear weapon as a structure of consensuses," Science Po student paper published by Institut de Recherche Stratégique de l'Ecole Militaire (2014). https://www.defense.gouv.fr/content/download/308300/4133597/file/NReIS_Sept_2014_Clement_LARRAURI.pdf. Accessed February 5, 2021.

148 Bruno Barrillot and Heinui Le Caill, "Moruroa, La Bombe et Nous," Délégation pour le suivi des conséquences des essais nucléaires (2011).

149 Jean-Marc Regnault, "Tahiti, Avec ou Sans la Bombe," *Vingtième Siècle* 53, no. 1 (1997).

150 The sinking of the Greenpeace boat Rainbow Warrior, in particular, led to international uproar and to a contentious struggle between French governmental agencies, NGOs, and neighboring countries in the Pacific waters. See Australian Living Peace Museum, Opposition to French Nuclear Testing 1960s–90s (2020). http://www.livingpeacemuseum.org.au/omeka/exhibits/show/nuclear-weapons-in-aus-pacific/opposition-french-testing. Accessed January 19, 2021.

At present, there is no major French organization at the base of the abolitionist movement. Some associations are local and have very limited influence. Other more prominent organizations such as Greenpeace and Sortir du Nucléaire gather greater financial contributions and more activists, but only sporadically address military nuclear issues.

The antinuclear movement today relies mainly on the actions of four small-scale groups. Two are domestic NGOs, one historical (Citizens' Association for Nuclear Disarmament—ACDN), and one younger with greater political connections, Initiatives for Nuclear Disarmament (IDN). Two French branches of international NGOs, ICAN-France (International Campaign for the Abolition of Nuclear Weapons) and PNND (Parliamentarians for Nuclear Non-Proliferation and Disarmament), are also active but not entirely separate: Jean-Marie Collin, for example, is vice president of IDN, director of the PNND for French-speaking European countries, a member of the steering committee of ICAN-France, and also a former researcher at the Arms Observatory. He is the most active and outspoken critic of nuclear deterrence in France, especially in the media.

These organizations are the most influential, relaying and circulating information as well as drawing attention to disarmament news, organizing conferences to disseminate information on campaigns, and drafting petitions. Giving their limited membership, they often depend on a handful of activists. Moreover, no well-known public figure increases the visibility of the movement. As such, these actions are almost never relayed by mainstream media, and eventually fail to gather the attention of the public. Finally, it is largely limited by the fact that each group and association can only rely on a small number of active members, about a dozen for most of them.

No Momentum Created by the TPNW

In recent years, these NGOs have tended to work together to organize campaigns on a particular issue. Project groups have regularly been formed, for example, around the Hiroshima and Nagasaki commemorations. In the context of the presidential elections, several NGOs have joined forces to put forward questionnaires sent to candidates to gather their position on disarmament. Led by ICAN, a recent initiative has focused on the denunciation of financial institutions investing in the military nuclear industry. The latter project aimed to target the banks that financed companies involved in the manufacturing of nuclear weapons and was the national development of the international "Bank the Bomb" initiative.

With the discussion on the TPNW, several campaigns have aimed to push the government to participate in the negotiation on the treaty, and later, to convince cities to join the ICAN Cities Appeal. These campaigns make it possible for NGOs to pool funds, as smaller groups join forces with larger NGOs with greater resources. While the attachment to an NGO has, for decades, often been local—sometimes with a somewhat parochial logic—these joint campaigns attempt to increase mobilization by going beyond traditional activism. This approach seems to respond to the preferences of the new generations of activists who are wary of the idea of a long-

term, binding commitment and of "old-style" activism, but are ready to get involved on more concrete issues, with more indirect methods such as promotion of causes on social networks, fundraising, cyberpetitions, disinvestment, and corporate social responsibility. Similarly, the marketing of such campaigns could make it easier to relay them on social networks that are the basis of activism in the 21st century.

Despite these developments, the abolitionist cause does not seem to have mobilized significant numbers in recent years. In fact, it seems that the struggle has not succeeded in affecting the generational renewal or at least the transition towards younger people—students and young graduates—that would be necessary to propagate the movement, even though the latter are now mobilized by other global causes like climate change. Moreover, the actions of traditional activists remain quite disconnected from the communication of newer international groups, such as ICAN or Global Zero. Activists from these groups have confessed difficulties of integration between the different structures that reflect foreign cultures both in terms of strategy and tactics.[151]

Through its branch ICAN-Youth, ICAN seeks to create a generation of activists by visiting universities and trying to dust off the cause. ICAN-France seems to have met the challenge of renewing activism methods and relying increasingly on young activists. The number of people active within the group seems to remain limited (less than 40) and its outreach weak (about 1000 Twitter followers). It mostly relies on international experts for content and debates. Moreover, to date, direct actions (fasting and demonstrations, for example) have only involved a handful of historical activists. Conferences of national or international caliber fail to attract those beyond the loyal circles of activists. Social networks, on the other hand, tend to operate in a vacuum with communication that is more likely to be picked up and shared among certain interest groups than broadly disseminated to the public.

Finally, at the academic level, a Chair has been created to discuss critically the basics of nuclear policy within the Centre de recherches internationales (CERI) of Sciences Po Paris. This research program, led by Benoît Pelopidas, has led to the publication of various studies and the organization of a number of events.[152] This Chair may help to renew the debate in the years to come, as it transits from the academic circle to the mainstream media, with a growing number of articles and columns published in recent months. The publications of the Chair are certainly contributing to the emergence of new voices and researchers working on nuclear issues in France. However, there is still uncertainty at this stage about how these activities can translate into a real policy debate among the general public, given the traditional lack of interest for these issues.

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151 For example, ADCN is not a member of the ICAN partners, and IDN is only remotely involved in ICAN activities. See "Rapport d'activité de septembre 2009 à février 2020," IDN-France (April 6, 2020).

152 For instance, Benoît Pelopidas, "The unbearable lightness of luck. Three causes of overconfidence in the manageability of nuclear crises," *European Journal of International Security* 2, no. 2 (July 2017).

Conclusion

Nuclear deterrence and disarmament continue to remain outside of public debate and remain an expert topic, where it is addressed either factually or in a way generally supportive of official policy. There has been a lack of public scrutiny despite recent developments, such as the adoption of the TPNW, the fear of a renewed arms race between major powers, and recent modernization investments. It is therefore unlikely that these trends will evolve in a major way in the foreseeable future. Nonetheless, observers should pay close attention to three developments that might influence French policy in the coming years.

First, there is the disarmament and nonproliferation conundrum. While international disarmament efforts are currently stagnating, an evolution of the strategic environment and the reopening of ambitious arms control discussions could put France in a difficult diplomatic position. Paris has indicated that its current level of weapons has reached a minimum and that France is under no obligation to join arms control initiatives as long as a discrepancy remains between its nuclear arsenal and the arsenals of other major nuclear powers. Although France participates readily in talks on the reduction of nuclear risks, there are few concrete actions that it seems willing to take to placate the fears of its partners.

Moreover, the narrative on the importance of nuclear deterrence to sustain France's independence and as an ultimate guarantee for the nation remains difficult to reconcile with the final objective of disarmament, which has been reluctantly admitted by French officials.[153] In this context, France could face a potential difficulty if its partners pushed for its integration in arms control talks or the adoption of additional disarmament measures. This potential risk has so far been averted. As Moscow's behavior is increasingly perceived as a threat by European partners, Paris has less imperative to justify its status quo position on nuclear issues. Nuclear deterrence is again seen as a necessary evil to preserve peace and stability on the continent.

Second, there is the ethical debate on nuclear weapons. In his speech on deterrence in February 2020, President Macron surprisingly concluded by questioning the morality of nuclear deterrence. This choice can be explained by his desire not to let the supporters of nuclear abolition have the monopoly on ethical considerations. At the same time, it can also be seen as a response to the Pope's recent condemnation of nuclear weapons. It is difficult to see a direct influence of the Holy See's more sustained criticism on nuclear weapons on French public opinion. However, as some constituencies involved in the implementation of the French nuclear doctrine are more Catholic than the general population, the military remains attentive to this ethical and

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153 "France shares the objective of a world without nuclear weapons, when the strategic context so allows." (emphasis added) Jean-Hugues Simon-Michel, "Nuclear disarmament cannot be declared, it must be built," 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Statement by Mr Jean-Hugues Simon-Michel, Permanent Representative of France to the Conference on Disarmament, Main Committee I (May 1, 2015). https://onu.delegfrance.org/NPT-Nuclear-disarmament-cannot-be. Accessed January 19, 2021.

theological debate.[154] It is generally held that there is no dilemma among strategic force commanders, even among Catholic officers, because they all accepted early on the supremacy of national policy over papal directives.[155]

Moreover, the bishop of the Diocese of the French Armed Forces regularly talks and writes about the compatibility of disarmament and the current French policy of deterrence.[156] While it is noticeable that French authorities want to address the question of morality, there is little reason to expect that this debate will influence the thinking on nuclear issues or the practice of deterrence in France. The speech itself has not led to any specific reactions and has been generally well-received by French observers, except for the criticism expressed by a few NGO leaders.

Third, there is the financial burden imposed by nuclear possession. While it is often said that nuclear deterrence only represents a small and affordable part of the defense budget (around €4.5 billion in 2019, approximately 10% of the total budget),[157] this has been increasing over the last few years and should peak at around €6 billion by the mid-2020s.[158] While to date there has been little public criticism regarding the cost of nuclear deterrence and modernization plans have been generally accepted by the public and parliament, these trends should not be taken for granted. The impending budgetary crisis following COVID-19, and the difficulties of reducing operational costs might invite greater scrutiny of French nuclear policy.

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154 Camille Le Gal, "La place des femmes dans la Marine", Masters Thesis, Sciences Po Toulouse (2005).

155 Corinne Laurant, "Dissuasion nucléaire: la lourde responsabilité morale des officiers français," *La Croix* (November 23, 2019).

156 Cécile Chambraud, "L'évêque aux armées: «Ayons une approche qui intègre les réalités militaires et politiques»," *Le Monde* (November 22, 2019).

157 French Ministry of Defense, "Les chiffres clés de la Défense" (2019). https://www.defense.gouv.fr/actualites/articles/les-chiffres-cles-de-la-defense-2019. Accessed January 19, 2021.

158 Sénat, "La nécessaire modernisation de la dissuasion nucléaire," Rapport d'information de MM. Xavier PINTAT, co-président, Jeanny Lorgeoux, co-président, André Trillard, Pascal Allizard et Claude Haut, n°560, 2016–2017 (May 23, 2017). https://www.senat.fr/notice-rapport/2016/r16-560-notice.html. Accessed January 19, 2021. Moreover, the perimeter used in official statistics for nuclear spending is limited in many ways, and the spending excludes personnel costs. Emmanuelle Maitre, "L'agrégat dissuasion: de quoi parle-t-on?," *Bulletin* 70, Observatoire de la Dissuasion, FRS (November 2019).

Nuclear Deterrence and Arms Control: A NATO Perspective

Jessica Cox and Joseph Dobbs[159]

Introduction

At a meeting of NATO leaders in London in December 2019, the Alliance's heads of state and government repeated a simple but strong declaration that for "as long as nuclear weapons exist, NATO will remain a nuclear alliance."[160] Nuclear deterrence has long been and will remain central to the security of NATO and its almost one billion people. Hand in hand with the Alliance's support of this mission is a strong commitment to effective arms control, disarmament, and nonproliferation. For NATO, the two are not contradictory pursuits, but rather part of a long-standing dual-track approach that has ensured the security of the Alliance over many decades.

This dual-track approach has a renewed importance for NATO today. Russia is once again challenging the Alliance with its nuclear forces. Moscow is developing new and novel nuclear capabilities, including intermediate-range missile systems and hypersonic weapons, and it is using its nuclear weapons and rhetoric to coerce and intimidate NATO allies.

NATO and the Dual-Track Approach

The challenge of finding the right mix of deterrence and defense on the one hand and diplomacy on the other is not new. In the 1960s, in what was then, too, a rapidly changing security environment, there were debates within the Alliance as to whether to prioritize a strong military strategy towards the Warsaw Pact or to pursue détente. In December 1966, NATO allies commissioned a study, initiated by then Belgian Foreign Minister Pierre Harmel to consider the Alliance's "future tasks." The resulting Harmel Report of 1967 declared that the Alliance's first task was to maintain strong defense and unity of purpose to deter aggression from its adversaries.[161] Its second task, however, was to "pursue the search for progress towards a more stable relationship in which the underlying political issues can be solved."[162] This dual-track approach

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160 North Atlantic Treaty Organization, "London Declaration" (December 4, 2019). https://www.nato.int/cps/en/natohq/official_texts_171584.htm. Accessed January 19, 2021.

161 North Atlantic Treaty Organization, "Future Tasks of the Alliance – Harmel Report" (1967). https://archives.nato.int/future-tasks-of-alliance-harmel-report. Accessed January 19, 2021.

162 Ibid.

served as the framework for NATO's relationship with the Soviet Union throughout the Cold War.[163]

In the 1970s, following the collapse of several efforts to improve relations between NATO and the Warsaw Pact, both qualitative and quantitative improvements in Soviet intermediate-range nuclear forces were of enormous concern to NATO. These weapons threatened NATO's European territory and were designed to "decouple" European allies from the United States. In response to this growing crisis, in December 1979, NATO's foreign and defense ministers applied the Harmel doctrine in developing the so-called "Double-Track" decision to pursue "two parallel and complementary approaches in order to avert an arms race in Europe caused by" Soviet deployment of intermediate-range nuclear forces.

The first was a "modernization decision," which included a "commitment to deployments," which was "necessary to meet NATO's deterrence and defense needs."[164] The second approach was a continued openness to arms control and a willingness to engage in negotiations with the Soviet Union, if Moscow was willing to include intermediate-range nuclear forces in any future deal. After several years of negotiations, this approach was ultimately successful; in 1987 the United States and the Soviet Union signed the Intermediate-Range Nuclear Forces (INF) Treaty, which eliminated all ground-launched missiles with a range between 500 kilometers (km) and 5,500 km.[165]

Lessons: Deterrence and the Dual-Track Approach Today

While NATO's security environment and indeed NATO itself have transformed since the development of the dual-track approach and since the end of the Cold War, there remain three lessons for today.

1. Unrestrained arms races undermine strategic stability and make deterrence more difficult.

The deployment of new Russian nuclear systems in Europe in the 1970s threatened NATO's security and posed a challenge to the Alliance's nuclear posture, requiring policy and posture changes to counter the threat. The same is true today. Russia's dual-use intermediate range air-, ground-, and sea-launched missile systems can target all of NATO's European capitals with little or no warning. Its new hypersonic missile systems, which fly at low altitudes and high speeds, and which are maneuverable in flight, will dramatically limit NATO's decisionmaking time, and ability to defend against and respond to these threats.

163 Jamie Shea, "How the Harmel Report Helped Build the Transatlantic Security Framework", Atlantic Council (January 29, 2018). https://www.atlanticcouncil.org/blogs/new-atlanticist/how-the-harmel-report-helped-build-the-transatlantic-security-framework/. Accessed January 19, 2021.

164 North Atlantic Treaty Organization, "Special Meeting of Foreign and Defence Ministers" (December 12, 1979). https://www.nato.int/cps/en/natolive/official_texts_27040.htm. Accessed January 19, 2021.

165 U.S. Department of State, "The Intermediate-Range Nuclear Forces Treaty (INF Treaty)" (December 8, 1987). https://2009-2017.state.gov/t/avc/trty/102360.htm. Accessed February 11, 2021.

While Moscow's doctrine and policy remain open to interpretation and its intentions are unclear, there is one overarching conclusion: The role of nuclear weapons in Russia's defense strategy is increasing. Moscow's nuclear weapons developments are forcing serious consideration within NATO about how a crisis might unfold under the shadow of new Russian nuclear capabilities and how to ensure NATO is able to continue to deter the threat or use of nuclear weapons against the Alliance.

As NATO continues to adapt its deterrence and defense in response to a renewed Russian challenge, the dual-track approach remains central to the Alliance's approach. Since 2016, for example, the NATO–Russia Council has met 10 times; it continues to be an important forum for dialogue. Individual allies, including NATO's three nuclear weapon states, also maintain bilateral and multilateral channels with Russia as part of the P5 process. The United States is again holding talks with Russia on strategic stability, and it regularly consults with its NATO allies on their bilateral discussions. Dialogue like this helped lead to major arms control progress in the past, and NATO hopes it can again.

2. Arms control agreements have helped to strengthen NATO's security by constraining arms races, promoting strategic stability.

Throughout the Cold War, dialogue and arms control initiatives, from transparency measures to legally binding treaties, helped reduce tensions and manage risks. When relations between NATO and the Soviet Union were at their most difficult, arms control negotiations were often a vital tool for ensuring strategic stability and reducing tensions. In the 1950s, the development of hydrogen bombs and the expansion of arsenals fueled rising tensions between NATO and the Warsaw Pact. President Dwight D. Eisenhower, understanding the risk of miscalculation brought by growing nuclear capabilities, began to advance arms control negotiations and initiatives as a way of stabilizing Cold War relations. While his two biggest initiatives—a test ban treaty and an open skies treaty—were not agreed to during his presidency, President Eisenhower's approach to transparency and arms control laid the groundwork for future progress.

Some of the biggest advances in nuclear arms control came in the wake of the most dangerous periods of the Cold War. Seeing how close the world came to nuclear war during the Cuban Missile Crisis, leaders on both sides of the Iron Curtain increasingly recognized the need to restrain the spread of nuclear weapons and slow down the rapid growth of nuclear arsenals. From the precipice of war in 1962, the rest of the 1960s saw the agreement of the Partial Test-Ban Treaty (PTBT), the Outer Space Treaty, and the beginning of the Strategic Arms Limitation Talks (SALT), which led to several landmark agreements on strategic weapons between the United States and the Soviet Union. Concerns about nations outside the P5 obtaining nuclear weapons led to the landmark negotiation and adoption of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which adopted a three-pronged approach to (1) prevent the

spread of nuclear weapons and technology, (2) provide for peaceful uses of nuclear energy, and (3) further the goal of complete nuclear disarmament.

The first half of the 1980s witnessed hostility, but the second saw the negotiation of the landmark INF Treaty, which contributed to stability between NATO and the Soviet Union and built trust that would ultimately help the Cold War to end with relative peace. Several events in the early 1980s, including the shooting down of a Korean Airlines flight by the Soviet Air Force, led the new Soviet leader Mikhail Gorbachev to remark in 1986 that "Never, perhaps, in the postwar decades has the situation in the world been as explosive and, hence, more difficult and unfavorable as in the first half of the 1980s."[166]

Following the end of the Cold War, arms control served as a tool to grow and embed better relations between NATO and Russia. Between 1991 and 2010 the Strategic Arms Reduction Treaty (START 1), Presidential Nuclear Initiatives (PNIs), Strategic Offensive Reductions Treaty (SORT), and New START all contributed to a dramatic reduction in nuclear stockpiles.

As a result of these initiatives, NATO allies reduced the number of nuclear weapons deployed in Europe by approximately 90%.[167] Russia similarly reduced its nuclear arsenal and changed its force structure. Most notably, by 2010, Russia had consolidated its tactical nuclear weapons at "central storage facilities" in Russia; removed tactical nuclear weapons from its ground forces; and dramatically cut the tactical nuclear arsenal of the air force, missile defense troops, and navy, reducing the number of nonstrategic nuclear weapons by around 75%.[168]

The success of arms control throughout the Cold War and post-Cold War periods is a reminder of its central purpose as a tool to alleviate security concerns and reduce the risks associated with future crises. As Schelling and Halperin famously wrote, an important part of the case for arms control is "minimizing the costs and risks of the arms competition, and in curtailing the scope and violence of war in the event it occurs."[169]

However, while arms control can be an effective way to prevent unconstrained arms races and manage risk, this is contingent on compliance by all parties. Unfortunately, Russia's support for arms control and reducing nuclear arsenals in the post-Cold War period were trends that did not continue into the 21st century. Russia has proven its willingness to ignore and abandon its commitment to arms control, including to legally binding treaties. Russia has developed and deployed the SSC-8 intermediate-

166 President's Foreign Intelligence Advisory Board, "The Soviet 'War Scare'" (February 15, 1990). https://www.archives.gov/files/declassification/iscap/pdf/2013-015-doc1.pdf. Accessed January 19, 2021.

167 Nuclear Threat Initiative, Presidential Nuclear Initiatives: An Alternative Paradigm for Arms Control (March 1, 2004). https://www.nti.org/analysis/articles/presidential-nuclear-initiatives/. Accessed January 19, 2021.

168 Estimates as to the size of the Soviet nonstrategic nuclear arsenal at the time of the Presidential Nuclear Initiatives vary significantly. The estimate of around 75% assumes a smaller original Soviet arsenal. For more, see: Nuclear Threat Initiative, Presidential Nuclear Initiatives: An Alternative Paradigm for Arms Control.

169 Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (New York: The Twentieth Century Fund, 1961).

range missile system, which was in clear violation of the INF Treaty and expanded its nonstrategic nuclear capabilities, demonstrating that it no longer feels bound by the Presidential Nuclear Initiatives of the 1990s. It used a chemical nerve agent on British soil in 2018 and blocked investigations into chemical weapons used in Syria, calling into question Moscow's commitment to the Chemical Weapons Convention. It has selectively implemented the Vienna Document, suspended implementation of the Conventional Armed Forces in Europe Treaty, and violated the Open Skies Treaty. It has also illegally occupied Ukrainian territory, in direct contravention to the Budapest Memorandum, in which Ukraine agreed to give up the nuclear weapons it had inherited from the Soviet Union in exchange for Russia's respect of its sovereignty and territorial integrity.

For arms control to effectively minimize the risk of arms competition and curtail the scope and violence of war, all parties must uphold their commitments. This has been shown to be true in terms of strategic arsenals, which the New START agreement and its predecessors have effectively restrained, and it can be true again in terms of nonstrategic arsenals if Russia is willing to be a faithful partner.

3. Russian violations require NATO to ensure a strong and credible deterrence posture.

Third, and finally, just as effective arms control facilitated nuclear reductions and lowered tensions, Russian violations of its commitments require NATO to ensure its deterrence posture remains strong and credible in the face of Russia's nuclear buildup. For instance, Russia's violation of the INF Treaty—with its development and deployment of the intermediate-range SSC-8 (or 9M729) missile—prompted U.S. withdrawal from the Treaty in 2019, which was supported by all NATO allies.[170] The SSC-8 is mobile and dual-capable, and it would be difficult to detect and defeat in a crisis. Its range can reach almost all European capitals and a significant part of the Asia-Pacific region. Together, these features mean Russia has the ability to conduct a first strike against NATO allies from within its own territory—significantly reducing decisionmaking time—and destroy critical European infrastructure, transatlantic supply chains, and military posture.[171] The military utility of this missile taken along with the Russian disinformation surrounding its development and deployment also indicates a wider political purpose to intimidate and divide NATO allies.

The SSC-8 is not the only Russian capability that concerns NATO. Russia's development and testing of hypersonic missile systems is at a relatively advanced stage. The strategic-range Avangard missile and the theater-range Tsirkon, alongside the Kinzhal air-launched ballistic missile currently in development, may eventually provide Russia greater nuclear flexibility and allow it to launch hypersonic missiles

170 North Atlantic Treaty Organization, "Statement on the Intermediate-Range Nuclear Forces (INF) Treaty Issued by the NATO Foreign Ministers, Brussels" (December 4, 2018). https://www.nato.int/cps/en/natohq/official_texts_161122.htm. Accessed January 19, 2021.

171 Jacek Durkalec, "European security without the INF Treaty", NATO Review (September 30, 2019). https://www.nato.int/docu/review/articles/2019/09/30/european-security-without-the-inf-treaty/index.html. Accessed January 19, 2021.

that are impossible to track or defend against. NATO will also have to determine how to respond to Russia's development of nuclear-powered cruise missiles and underwater unmanned nuclear torpedoes, which have potentially unlimited ranges and are not captured in any current arms control agreements should those systems be deployed. Finally, the dual-capable nature of many of Russia's missiles, including the Iskander, Kaliber, and SSC-8 mean that if a launch was detected it would be difficult to ascertain whether the missile carried a nuclear or conventional payload, thus complicating NATO's response and increasing the risk of miscalculation.

Another significant concern for NATO, as it should also be for Russia and all nuclear-armed states, is entanglement between the nuclear and nonnuclear domains. This challenge will increase as the development of emerging and disruptive technologies continues. Offensive cyber capabilities, which could be greatly enhanced by the advent of quantum computing, artificial intelligence, and the increasingly complex information space, all risk undermining nuclear command, control, and communications systems. Both the United States, in its 2018 Nuclear Posture Review,[172] and Russia, in its 2020 State Policy on Nuclear Deterrence,[173] have declared that nuclear weapons use could be considered in the event that nonnuclear attacks against nuclear forces were detected. This is a challenge that should be taken extremely seriously.

It is not just Russia's growing nuclear capabilities that concern NATO. Russia's increasingly aggressive nuclear rhetoric and its snap military exercises also threaten stability in the Euro-Atlantic area. For example, Russian officials have publicly simulated a nuclear strike against the United States[174] and threatened to target nuclear missiles at Romania,[175] Denmark,[176] North Macedonia,[177] and NATO allies generally. Along with snap military exercises—the most recent of which saw 150,000 military personnel deployed to Russia's southwest in July 2020[178]—Moscow's destabilizing threats and actions can be interpreted as seeking to confuse, intimidate, and coerce NATO members.

172 U.S. Department of Defense, *Nuclear Posture Review* (February 2018). https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF. Accessed January 19, 2021.

173 Russian Ministry of Foreign Affairs, "Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence" (June 2, 2020). https://www.mid.ru/en/web/guest/foreign_policy/international_safety/disarmament/-/asset_publisher/rp0fiUBmANaH/content/id/4152094. Accessed January 19, 2021.

174 "Russia's Putin unveils 'invincible' nuclear weapons," BBC (March 1, 2018). https://www.bbc.com/news/world-europe-43239331. Accessed January 19, 2021.

175 Irina Marica, "Russian foreign ministry official: Romania is a 'clear threat' to Russia," *Romania Insider* (February 9, 2017). https://www.romania-insider.com/russian-foreign-ministry-official-romania-clear-threat-russia. Accessed January 19, 2021.

176 "Russia threatens to aim nuclear missiles at Denmark ships if it joins NATO shield," *Reuters* (March, 22 2015). https://www.reuters.com/article/us-denmark-russia-idUSKBN0MI0ML20150322. Accessed January 19, 2021.

177 Сергей Болотов, *"Сенатор Андрей Климов назвал страны НАТО мишенью для ядерных ракет,"* РИДУС (March, 30 2020). https://www.ridus.ru/news/323523. Accessed January 19, 2021.

178 "Putin Orders Massive Snap Military Drills," *Moscow Times* (July 17, 2020). https://www.themoscowtimes.com/2020/07/17/putin-orders-massive-snap-military-drills-a70908. Accessed January 19, 2021.

Given this changing security environment, NATO must be able to deter nuclear threats and respond to nuclear use by Russia in order to safeguard the security of the almost one billion people who live under the NATO umbrella. This is not an easy task. Deterring a potential adversary that sees a bigger role for nuclear weapons, as outlined in the recently published Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence,[179] and one that has shown willingness to violate key arms control agreements, is challenging.

NATO allies have decided not to respond to the growing Russian nuclear challenge with like-for-like measures, which goes some way to alleviate the risks of an unconstrained nuclear arms race. NATO Secretary General Jens Stoltenberg has repeatedly said that there is no intention to mirror Russia by deploying ground-launched nuclear-armed missiles in Europe.[180] Nor is there any discussion of altering NATO's nuclear posture in such a way that would be contrary to the principles in the NATO–Russia Founding Act.[181] Instead, defense ministers have agreed to a measured and defensive response to maintain effective deterrence, which includes options to adapt the Alliance's exercises, intelligence and surveillance, missile defenses, and conventional capabilities as well as steps to ensure the continued safety, security, and effectiveness of NATO's nuclear capabilities.

Alongside the independent nuclear capabilities of NATO's three nuclear weapon states, an important part of NATO's nuclear deterrence remains its nuclear sharing arrangements through the dual-capable aircraft (DCA) mission. Nuclear sharing sends a signal to potential adversaries of the strong transatlantic commitment to collective security and the shared responsibility for nuclear deterrence across the Alliance. The modernization of NATO's DCA capabilities and continued efforts to ensure their credibility and effectiveness demonstrate a unity and resolve that has proven all the more important in the face of Russia's actions. It also sends a strong signal to Russia that it will not achieve its objectives by resorting to even the limited use of nuclear weapons in a conflict by showing that NATO has the capability and resolve to impose unacceptable costs greater than any intended gain and, in short, that any nuclear attack by Russia will not succeed.

179 Russian Ministry of Foreign Affairs, *Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence* (2020). https://www.mid.ru/en/foreign_policy/international_safety/disarmament/-/asset_publisher/rp0fiUBmANaH/content/id/4152094. Accessed February 9, 2021.

180 North Atlantic Treaty Organization, "Press conference by NATO Secretary General Jens Stoltenberg following the meetings of NATO Defense Ministers" (June 17, 2020). https://www.nato.int/cps/en/natohq/opinions_176520.htm. Accessed January 19, 2021.

181 The NATO–Russia Founding Act was agreed by the Russian Federation and NATO allies in 1997. The Act established the principles of relations and a Permanent Joint Council to act as a forum for consultation. For more see: North Atlantic Treaty Organization, "Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation signed in Paris, France" (May 27, 1997). https://www.nato.int/cps/en/natohq/official_texts_25468.htm. Accessed January 19, 2021.

Conclusion

Together, these three lessons show that while deterrence is central to NATO's response to growing nuclear threats, dialogue and arms control remain core and complementary components of the Alliance's overall approach. NATO's 1979 double-track decision referred to the deterrence track as proving "the foundation for the pursuit of serious negotiations" with the Soviet Union on intermediate-range nuclear weapons. A credible deterrence and clarity about the concerns NATO has with Russia's growing suite of nuclear capabilities can once again serve as the foundation for future negotiations with Russia.

Defining the Needed Balance of Deterrence and Arms Control in Europe

Anna Péczeli

Introduction

NATO's December 2019 London Declaration stated that "As long as nuclear weapons exist, NATO will remain a nuclear alliance. We are fully committed to the preservation and strengthening of effective arms control, disarmament, and non-proliferation, taking into account the prevailing security environment."[182] For the Alliance, deterrence and arms control are not contradictory concepts. In fact, these two pillars can mutually strengthen each other. On the one hand, defining an ambitious arms control agenda helps many European governments to maintain the needed domestic support for a strong deterrence posture, and on the other hand, maintaining the credibility of NATO's deterrent can help to advance arms control objectives. Finding the right balance between these concepts is key to developing stable relationships with adversaries.

The Alliance has a long history of balancing deterrence and arms control. The idea of the balancing act dates back to the 1967 Harmel Report, which stated that "Military security and a policy of détente are not contradictory but complementary. [...] The way to peace and stability in Europe rests in particular on the use of the Alliance constructively in the interest of détente."[183] Since the Harmel Report, the Alliance has pursued a strategy of deterrence and political détente towards Moscow. However, changes in the security environment over the last 50 years have required some adjustments in implementing these two concepts.

During the Euro-missile crisis, European security was seriously undermined when Moscow replaced its aging SS-4 and SS-5 missiles with the new SS-20 triple-warhead ballistic missiles. In response to the increased Soviet missile threat, the Alliance adopted the so-called dual-track decision in 1979. As Moscow was not willing to negotiate about its intermediate-range missiles, NATO applied the dual logic of the Harmel Report with an adjustment. The Alliance offered deterrence or détente by developing a separate deployment track and an arms control track. This approach provided the Soviet Union with a choice: It could face the deployment of 108 Pershing II ballistic missiles and 464 ground-launched cruise missiles (GLCMs) in Europe;[184] or it could negotiate away this problem by agreeing to arms control measures focusing on the intermediate-range missiles that upset the security

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182 North Atlantic Treaty Organization, "London Declaration" (December 4, 2019). https://www.nato.int/cps/en/natohq/official_texts_171584.htm. Accessed January 19, 2021.

183 North Atlantic Treaty Organization, "The Future Tasks of the Alliance: Report of the Council – The Harmel Report" (December 13, 1967). https://www.nato.int/cps/en/natohq/official_texts_26700.htm. Accessed January 19, 2021.

184 U.S. Department of State, "Intermediate-Range Nuclear Forces (INF) Treaty" (December 8, 1987). https://2009-2017.state.gov/t/avc/trty/102360.htm. Accessed February 11, 2021.

balance. The dual-track decision helped to overcome an intense period of NATO–Soviet relations and paved the way for several arms control and confidence- and security-building measures (CSBMs) in Europe.

Since the end of the Cold War, NATO–Russia relations have never been this close to a conflict. The chances of escalation due to deliberate provocations, accidents, or misunderstandings are high. Russia deploys a large number of troops along NATO's borders, and it demonstrates their readiness through regular exercises that simulate attacks on the Alliance. The 2016 Warsaw Summit described this new deterrence challenge as follows: "Russia's aggressive actions, including provocative military activities in the periphery of NATO territory and its demonstrated willingness to attain political goals by the threat and use of force, are a source of regional instability, fundamentally challenge the Alliance, have damaged Euro-Atlantic security, and threaten our long-standing goal of a Europe whole, free, and at peace."[185]

Over the past six years, the Alliance has begun a major adaptation of its posture and capabilities, and implemented important measures so as to better address the Russia challenge. Despite these efforts, there are still many gaps in capabilities and concepts. On the deterrence side, questions remain about the credibility of NATO's overall defense posture against Russian intimidation. On the arms control side, Europe has seen a gradual degradation of cooperative measures. The new strategic challenge posed by Russia, and the problems of the arms control architecture both contribute to the growing likelihood of inadvertent escalation in a crisis situation.

This chapter argues that NATO should develop a new dual-track approach to address these issues and to reestablish stability in Europe. The Alliance needs to continue its adaptation measures and implement further steps with the active assistance of the United States. At the same time, Europeans see a strong connection between deterrence and arms control, and continuing the adaptation of NATO's deterrence tool kit will also require renewed attention on the arms control track, which has seen serious setbacks in recent years. Pursuing these two tracks simultaneously proved successful during the Cold War, and it could limit the chances of conflict again.

The New Deterrence Challenge for the Alliance

The end of the Cold War started a new chapter in NATO–Russia relations. Russia was no longer seen as NATO's primary adversary, which opened the door to new areas of cooperation. As a result of general optimism about the future of European security, Washington and its allies reoriented their focus to the emerging threats from non-state actors, terrorist organizations, and the proliferation of weapons of mass destruction. This led to a gradual loss of their analytical capacity to understand Russian strategic

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185 North Atlantic Treaty Organization, "Warsaw Summit Communiqué" (July 9, 2016). https://www.nato.int/cps/en/natohq/official_texts_133169.htm. Accessed January 19, 2021.

thinking.[186] Since the annexation of Crimea, the Alliance has faced an unexpected need to return its focus to collective defense and the eastern security challenge.

Russia today is a revisionist power[187] that challenges the status quo.[188] As the 2014 Wales Summit Communiqué stated: "We are also concerned by Russia's pattern of disregard for international law. [...] This threatens the rules-based international order and challenges Euro-Atlantic security."[189] Brad Roberts argues that an important element of Russia's long-term objective is undermining the credibility of U.S. assurances. The primary focus of Putin's "theory of victory" is how to contain and localize a regional war in Europe that would involve the United States. In such a war, the main targets would be U.S. allies, with the ultimate objective of creating divisions among NATO members. Since any conventional conflict in Europe has a high risk of spillover to other domains and theaters, nuclear weapons play a central role in Russia's strategy of intimidation and escalation control.[190]

Russia is in a unique geographic, political, economic, and strategic position, which requires unique solutions and approaches to security. Russia's strategy relies on both ambiguous (nonattributable) and nonambiguous means of warfare. The traditional means, like the threat and use of conventional and nuclear forces, are complemented with the ambiguous (hybrid warfare) tools of special forces (little green men), information warfare, disinformation campaigns, cyberattacks, political sabotage, and economic pressure (including energy blackmail).[191] Smaller peacetime provocations serve to generate conflict fatigue among the allies. Over the last decade, European states have faced constant political, military, and economic pressures to limit their security cooperation with Washington. Russia has formulated open military threats[192] against those allies that host different high-value military assets along NATO's eastern flanks. It has also issued political threats in an effort to decouple Europeans from the United States.

Over the past few years, Russian exercises have demonstrated rapid force movements across and between regions, high readiness levels, fast decisionmaking,

186 Lawrence Livermore National Laboratory, "Multi-Domain Strategic Competition: Rewards and Risks," CGSR Workshop Summary (December 2018). https://cgsr.llnl.gov/content/assets/docs/Deterrence_Workshop_Summary_Final2018.pdf. Accessed January 19, 2021.

187 Angela Stent, *Putin's World: Russia Against the West and With the Rest* (New York: Twelve, 2019).

188 Vladimir Putin, Valdai International Discussion Club's XI session – The World Order: New Rules or a Game without Rules (October 24, 2014). http://en.kremlin.ru/events/president/news/46860. Accessed January 19, 2021.

189 North Atlantic Treaty Organization, "Wales Summit Declaration" (September 4, 2014). https://www.nato.int/cps/en/natohq/official_texts_112964.htm. Accessed January 19, 2021.

190 Brad Roberts, *On Theories of Victory, Red and Blue*, Livermore Papers on Global Security No. 7 (June 2020). https://cgsr.llnl.gov/content/assets/docs/CGSR-LivermorePaper7.pdf. Accessed January 19, 2021.

191 Stephen R. Covington, *The Culture of Strategic Thought Behind Russia's Modern Approaches to Warfare*, Harvard Kennedy School, Belfer Center for Science and International Affairs Paper (October 2016), p9. https://www.belfercenter.org/sites/default/files/legacy/files/Culture%20of%20Strategic%20Thought%203.pdf. Accessed January 19, 2021.

192 "Russia Threatens to Aim Nuclear Missiles at Denmark Ships if It Joins NATO Shield," *Reuters* (March 22, 2015). http://www.reuters.com/article/us-denmark-russiaidUSKBN0MI0ML20150322. Accessed January 19, 2021.

and the availability of the entire spectrum of military capabilities around the potential conflict zones. Russia has been exercising both vertical and horizontal escalation. This means that Russia is prepared to handle the escalation of the conflict from conventional to nuclear, and that it also expects that the crisis might spread geographically. Moscow has also conducted a number of snap exercises aiming to reduce Russia's vulnerability to surprise attacks by testing and enhancing its reaction time.[193] These exercises are sometimes prepared within days, which serves to get ready for unexpected military confrontations, and sends a strong message to its adversaries about Russia's readiness to react and escalate in a crisis.

In these exercises, Moscow emphasizes quick reaction time and escalation control to realize its goals. Achieving its military and political objectives before an adversary can mobilize is key to creating facts on the ground that would be very risky for the other side to reverse.[194] Once this is achieved, carefully calculated escalatory steps and threats would be used to force the United States and its allies to surrender. The logic behind this strategy rests on a few key assumptions. First, it assumes that there is an asymmetry of stakes: In a regional conflict, the United States would fight to defend its allies, while Russia might need to defend its sovereignty and integrity. Second, there is an asymmetry of geography: While the United States would be fighting in a theater far from its homeland, a regional war in Europe would most likely entail counterattacks on Russian territory from the beginning. And third, there is an asymmetry of political systems: Democracies are seen by Russia as weak and vulnerable, easy to manipulate and paralyze in a crisis. In a conflict, Russia believes that these asymmetries can be exploited for their advantage by threatening higher costs than the United States would be willing to accept.[195]

Russia has developed a much broader approach to strategic deterrence and competition than Western states. This holistic thinking includes the entire range of political, military, diplomatic, economic, and informational measures. In the military domain, Moscow's strategy is supported by a specific set of capabilities and tactics. These include concentrating conventional troops along its western borders, developing advantages in missile capabilities, maintaining superiority in nonstrategic nuclear weapons (NSNW), and pre-positioning anti-access/area denial (A2/AD) technologies to prevent adversaries from deploying capabilities around the periphery of the potential conflict zones (and in case of escalation, to deny the adversary viable military options by preventing the quick mobilization of its forces). The tools of hybrid warfare are key to disrupting the coordinated efforts of the adversary, paralyzing the command and control systems, and launching cyberattacks to create malfunctions in enemy communication and movement.[196]

193 Katarzyna Zysk, "Escalation and Nuclear Weapons in Russia's Military Strategy," *The RUSI Journal* 163, no. 2 (2018), p1–12.

194 Stephen R. Covington, "The Culture of Strategic Thought Behind Russia's Modern Approaches to Warfare."

195 Brad Roberts, *On Theories of Victory, Red and Blue*.

196 Stephen R. Covington, "The Culture of Strategic Thought Behind Russia's Modern Approaches to Warfare."

The success of Russian strategy also relies on effective signaling and ambiguity. Russian officials have been outspoken[197] about their willingness to use nuclear weapons to defend Russia's interests. However, Moscow's integrated strategic deterrence, and the heavy investments in dual-capable systems leave a lot of ambiguity about the exact nuclear thresholds of the country.[198] This unpredictability and the numerous aggressive maneuvers of Russian aircraft and naval vessels—which violate NATO airspace and territorial waters on a regular basis—create an increased chance of escalation due to accidents or misunderstandings.[199]

Altogether, there are many elements of Russia's strategy that bear an increased possibility of confrontation with NATO (both deliberate and unintended). On one level, these include the proximity of the zones of influence, Russia's aggression against Georgia, Crimea, and Donbas, and its increased military presence along the NATO borders. There is also Russia's holistic approach to strategic deterrence, the way it trains its forces, its signaling practices, and the aggressive rhetoric of the leadership. Lastly, there is the increased significance of new technologies that dramatically reduce reaction time, and the abundance of dual-capable systems, which increase uncertainties. All of these factors contribute to a certain level of unpredictability, creating a very difficult challenge for NATO to build a coherent deterrence strategy.

A Renewed Emphasis on NATO's Deterrence Tool Kit

In the post-Cold War environment, NATO retained its original focus on collective defense but it also added cooperative security and crisis management to its core tasks. These new areas addressed nontraditional threats, in many cases outside the territory of its member states.[200] However, Russia's aggression in Crimea and Donbas forced the Alliance to return to its core mission of collective defense and the protection of member states' territorial integrity. Member states launched a major adaptation of NATO to address the deterrence and capability challenge that Russia poses today.

Assessing the potential threats and developing a comprehensive strategy that can deal with all contingencies has been the biggest challenge for NATO. The Alliance today operates in a very unpredictable security environment—threats can emerge from a great variety of state and non-state actors, which have the ability to use the

197 Lidia Kelly, "Russia Can Turn US to Radioactive Ash – Kremlin-Backed Journalist," *Reuters* (March 16, 2014). http://www.reuters.com/article/ukraine-crisis-russia-kiselyovidUSL6N0MD0P920140316. Accessed January 19, 2021.
Alexei Anishchuk, "UPDATE 1—Don't Mess With Nuclear Russia, Putin Says," *Reuters* (August 29, 2014). http://uk.reuters.com/article/russia-putin-conflict-idUKL5N0QZ3HC20140829. Accessed January 19, 2021.

198 Dave Johnson, *Russia's Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds,* Livermore Papers on Global Security (February 2018). https://cgsr.llnl.gov/content/assets/docs/Precision-Strike-Capabilities-report-v3-7.pdf. Accessed January 19, 2021.

199 Thomas Frear, Łukasz Kulesa, and Denitsa Raynova, *Russia and NATO: How to overcome deterrence instability?,* European Leadership Network, Euro-Atlantic Security Report (April 2018). https://www.europeanleadershipnetwork.org/wp-content/uploads/2018/04/26042018-Deterrence-Russia-NATO-Thomas-Frear-Lukasz-Kulesa-Denitsa-Raynova.pdf. Accessed January 19, 2021.

200 David Yost, *NATO's Balancing Act* (Washington, DC: United States Institute of Peace, 2014).

whole spectrum of tools from traditional military forces to cyberattacks, terrorist acts, information warfare, political sabotage, or economic pressure. NATO's attention is divided between two major strategic directions: the eastern challenge with Russia, and the southern challenge, which includes North Africa, the Middle East, the Caucasus, and Afghanistan. In order to maintain solidarity and unity within the Alliance, member states need to devote serious attention to both challenges and implement the necessary measures. While the eastern challenge primarily requires a renewed attention on deterrence and collective defense, the southern challenge requires maintaining the ability to conduct operations outside NATO's borders and run large military interventions if needed.

In order to respond to the eastern challenge, NATO needs to be able to deter Russia's whole-spectrum approach. By 2015, the Alliance devised a strategy of prepare (strategic awareness), deter, and defend.[201] NATO's objective in peacetime is to enhance its deterrence posture, develop capabilities that can deny Russia viable military options in a conflict, and guarantee that Moscow's risk calculation will conclude that aggressive and escalatory measures cannot bring political or military advantages. NATO, therefore, formulated its adaptation around three principles: responsiveness, readiness, and reinforcements.[202]

The principle of responsiveness comprises two aspects. The first is political, which requires NATO to make timely decisions in a crisis. The second aspect is military. The Alliance needs to be ready to deploy forces in any conflict zone where challenges emerge. The principle of readiness requires sufficient combat-ready forces and capabilities around potential frontlines. These forces need to be deployed rapidly for collective defense or crisis stability operations. The last principle, reinforcements, necessitates NATO develop the capabilities to send effective military support to any ally whose security is threatened. In the face of 21st-century threats, all these principles need to be supported by increased resilience against hybrid threats.

Many of the proposed measures from the 2014 Wales and the 2016 Warsaw Summits have already been realized. NATO improved the readiness of its response force and increased its conventional footprint in Eastern Europe. The forward-deployed multinational troops are important trip wires to guarantee that any incursion into a NATO member's territory will face armed forces from multiple NATO member states— this enhances deterrence and also reinforces alliance solidarity.[203] These measures have been complemented by an increased number of multinational exercises in the region, and a renewed focus on speeding up the decision-making procedures within NATO, enabling a decision on mobilizing the rapid response forces within eight to 12 hours. NATO has also reinforced its maritime and air presence around the Black

201 North Atlantic Treaty Organization, "NATO's response to hybrid threats" (July 17, 2018). https://www.nato.int/cps/en/natohq/topics_156338.htm. Accessed January 19, 2021.

202 Heinrich Brauss, *NATO Beyond 70*, International Centre for Defence and Security, Estonia (November 2018). https://icds.ee/wp-content/uploads/2018/11/ICDS-Analysis_NATO-Beyond-70_Heinrich-Brauss_November-2018-1.pdf. Accessed January 19, 2021.

203 Heinrich Brauss, *NATO Beyond 70*.

Sea region. The United States has been an active contributor to these measures, and between 2014–2019 it has visibly increased its presence in Europe under the European Deterrence Initiative (EDI). This has resulted in more U.S. troops, a bigger U.S. role in exercises and training, more pre-positioned military assets, and support for better infrastructure in the region.[204]

The 2018 Brussels Summit[205] emphasized enhancing the credibility and effectiveness of these steps by addressing the gaps in planning, capabilities, decisionmaking procedures, command and control (C2), and resilience. The Alliance agreed to continue improving advance planning to enable addressing different challenges simultaneously. It also decided to work on better responses to Russia's A2/AD capabilities in Crimea and Kaliningrad. A reform of NATO's exercise routine was also approved to better prepare for large-scale integrated operations and reinforcements, and further steps were envisioned to enhance timely decisionmaking in the case of surprise attacks.

NATO also decided to address some of the gaps in the C2 system by enabling the NATO Command Structure (NCS) to run operations along the whole spectrum. Under the umbrella of the NCS reform, the Alliance decided to establish a new Cyber Operations Centre in Mons (Belgium), the Joint Force Command Norfolk (United States) to manage U.S. and Canadian troop movements, and the Joint Support and Enabling Command in Ulm (Germany) to support the movement of troops in and around Europe. The last main issue addressed at the summit was the reinforcement of NATO's deterrence posture by the so-called "4x30" initiative (maintain 30 land battalions, 30 air squadrons, and 30 combat vessels in a ready-to-employ status within 30 days).[206]

NATO is also working with the European Union to create the necessary legislative environment, C2 arrangements, logistics, and infrastructure for the better movement of troops across the Euro-Atlantic region. The Russian holistic approach to the strategic competition induced the Alliance to revisit its maritime and air power strategies to better protect its critical infrastructure, enhance its warfighting tactics, and enable its air policing mission and ballistic missile defense deployments. The Alliance also reviewed its nuclear posture, and discussions are underway regarding the implications of the collapse of INF for Europe, including what capabilities are needed to convince Russia that launching a limited nuclear war against the Alliance would bring far more costs than benefits.

A crucial aspect of all these measures has been the budget debate. At the Wales Summit, allies committed themselves to reverse the negative trends in defense spending and reach the 2% of GDP threshold by 2024. Fairer burden-sharing has

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204 Ibid.

205 North Atlantic Treaty Organization, Brussels Summit Declaration (July 12, 2018). https://www.nato.int/cps/en/natohq/official_texts_156624.htm. Accessed January 19, 2021.

206 Heinrich Brauss, *NATO Beyond 70.*

been a longstanding U.S. demand towards Europe, and the Trump administration indicated that U.S. security assurances might depend on this. Although the allies have increased their defense spending, only 8 of the 29[207] members approached or reached the 2% goal in 2018, and only 16 allies plan to reach the 2% goal by 2024.[208] In light of this, it is very likely that Washington will continue to criticize its European allies; it has already limited some of its contributions through the EDI. The Trump administration's commitment to its allies was a serious internal challenge for NATO, and some European leaders, such as Angela Merkel, suggested strengthening the ability of the E.U. to act in a crisis situation to reduce the continent's dependence on U.S. and U.K. forces.[209]

In the coming years, a key question that will likely emerge is whether NATO's deterrence adaptation is a continuing project, or whether this adaption was concluded at the Brussels Summit. Member states disagree about the extent to which NATO should continue reassuring worried allies on its eastern flanks. So far, the Alliance has showed a strong level of solidarity and has agreed to significant deterrence measures, but there might be a limit to this solidarity in the future. Most importantly, Europe is already divided on Russia. While some European states favor a quick resolution to the debated issues (e.g., the future of Crimea) and advocate lifting sanctions, frontline states feel directly threatened by Russia and their main objective is to improve their security through more assets and troops on the ground.[210] These political differences might come to haunt the Alliance soon. While one group of allies argues that what NATO has done is enough,[211] many Eastern Europeans see these steps as only the beginning of a long adaptation.[212]

Due to these differences, NATO's strategy still misses a crucial element, namely a clear articulation of its objectives vis-à-vis Russia. Moscow seems to have a cohesive "NATO strategy" and relatively obvious goals for both peacetime and wartime. The Alliance, on the other hand, still needs to provide an answer to a number of questions. Are these steps enough to contain the Russian whole-spectrum approach? In its adaptation, the Alliance has primarily focused on its conventional and hybrid tool kit, but can these capabilities effectively deter Moscow when its leadership seems to think that it has escalation dominance, partly due to its greater diversity in nuclear

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207 Since 2018, the number of NATO member states has grown to 30.

208 Heinrich Brauss, *NATO Beyond 70*.

209 "Merkel: Europe can no longer rely on US and Britain," *Deutsche Welle* (May 28, 2017). https://www.dw.com/en/merkel-europe-can-no-longer-rely-on-us-and-britain/a-39018097. Accessed January 19, 2021.

210 Gustav Gressel, *Under the Gun: Rearmament for Arms Control in Europe*, European Council on Foreign Relations Policy Brief (November 2018). https://www.ecfr.eu/page/-/under_the_gun_rearmament_for_arms_control_in_europe5.pdf. Accessed January 19, 2021.

211 Jens Ringsmose and Sten Rynning, "Now for the Hard Part: NATO's Strategic Adaptation to Russia," *Survival* 59, no. 3 (2017), p129–146.

212 Ulrich Kühn, *Preventing Escalation in the Baltics: A NATO Playbook*, Carnegie Endowment for International Peace (2018). https://carnegieendowment.org/files/Kuhn_Baltics_INT_final_WEB.pdf. Accessed January 19, 2021.

capabilities? Since some of the additional capabilities NATO seeks to incorporate into its forces will take years to develop, is NATO ready to handle a crisis with Russia today? Can NATO defeat Russia in circumstances other than a prolonged, large-scale war? What if NATO fails to deter? How does it plan to handle a short war that goes nuclear early on? What if Russia wins a local war conventionally against a NATO member state? Is the Alliance ready to escalate the conflict to protect its members? The answers to these questions will help determine whether NATO's strategy should achieve anything more than just deterring Russia, and what the Alliance should do if deterrence fails.

It is without a doubt that NATO has implemented important measures, and today, the Alliance is in better shape to handle the Russian threat than six years ago. But the Russian approach to strategic competition involves more than just a military dimension; it is very likely that NATO's strategy will also need to incorporate more than just the elements of deterrence. In the 1980s, the dual-track approach successfully balanced deterrence needs with arms control objectives—the question is, what kind of role can cooperative measures play in the Alliance's integrated strategy towards Russia today?

Revisiting the Arms Control Track

During the Cold War, the member states of NATO and the Warsaw Pact spent decades to negotiate and construct an arms control architecture in Europe. This regime included bilateral and multilateral elements that implemented legally binding limits on nuclear, conventional, and missile defense capabilities, as well as informal confidence- and security-building and transparency measures that were not necessarily legally binding. Some of these mechanisms were short-lived, while others are still in effect today. As Jessica Cox and Joseph Dobbs argue, arms control agreements have helped strengthen NATO's security by constraining arms races and promoting strategic stability. Arms control created stability by introducing transparency in military planning and capabilities, increasing trust, and lowering the risks of unintended conflict by limiting and reducing force levels. In the past few years, however, the European arms control regime came to a deadlock and several agreements were suspended or became strained.

In the conventional domain, the Vienna Document on Confidence- and Security-Building Measures, the Treaty on Conventional Armed Forces in Europe (CFE), and the Open Skies Treaty (OST) all face serious challenges. In the case of the CFE Treaty, the first two pillars—the pillar of troop limitations and the pillar of flank rules—became obsolete by the late 1990s. Both NATO and Russia professionalized their armed forces and reduced the size of their troops significantly, going below CFE limitations. This adaptation also meant that they put the emphasis on highly mobile forces that can be deployed quickly in any conflict zone, reducing the significance of the flank rules. The signatories adapted the CFE Treaty in 1999 and moved from bloc-to-bloc limitations to limits on individual state's force levels, which would have given new meaning to the first pillar. But the implementation of the Adapted CFE Treaty ran into difficulties because

of political differences over Russian troops in Georgia and Moldova. The third pillar, inspections, could still serve as an important transparency and CSBM, but Russia partially suspended the implementation of the CFE Treaty in 2007, and then it fully suspended implementation in 2015 because of NATO's resistance to ratify the Adapted CFE until the Georgia and Moldova disputes were resolved.[213]

The (first) Vienna Document was concluded in 1990 to increase transparency in conventional forces by regular inspections and data exchanges. The document was updated many times in the 1990s. It complemented the CFE Treaty by covering all 57 Organization for Security and Cooperation in Europe (OSCE) member states. Although it is not legally binding, the annual report on conventional armed forces, exercises, and deployments, as well as the notification and inspection mechanisms, are still useful transparency and CSBM measures. However, the document has several loopholes that have been exploited by Russia. To avoid inspections, Russia has been dividing its large-scale exercises in the western parts of the country into smaller exercises, entirely circumventing the Vienna Document. Moreover, Moscow has also blocked every diplomatic attempt to update the document since its last adaptation in 2011.[214]

The Open Skies Treaty (OST) allows signatories to conduct reconnaissance flights in each other's airspace, structured by a quota system. Until the annexation of Crimea, the OST worked relatively efficiently, but as the West and Russia suspended their cooperation, the agreement became deadlocked. Moscow has been using territorial disputes to prevent certain verification flights over Abkhazia and South Ossetia, and it also restricted flights over Kaliningrad. Russia argues that Abkhazia and South Ossetia are independent non-signatory states, thus not covered by the agreement. These steps reduced the value of the Open Skies agreement in the eyes of the Trump administration, which also accused Russia of using the OST flights to collect targeting information on critical NATO infrastructure, useful for possible future attacks with precision-guided conventional munitions. As a result, in May 2020 the Trump administration officially notified its intent to withdraw from the OST.[215]

Over the last few years, the OSCE's Structured Dialogue tried to address some of these problems. Due to the lack of trust between both sides, the dialogue primarily aimed at risk reduction measures instead of concluding a new arms control treaty. Despite this not-too-ambitious agenda, it has not produced any meaningful results because Russia seems to enjoy and benefit from the lack of transparency. The only area where there has been some positive movement is in the domain of deconfliction measures. Avoiding dangerous encounters and preventing incidents between NATO

213 Kingston Reif, "Russia Completes CFE Treaty Suspension," Arms Control Association (April 2015). https://www.armscontrol.org/ACT/2015_04/News-Briefs/Russia-Completes-CFE-Treaty-Suspension. Accessed January 19, 2021.

214 Gustav Gressel, *Under the Gun: Rearmament for Arms Control in Europe.*

215 Kingston Reif, "U.S. Conducts Special Open Skies Flight," Arms Control Today (January/February 2019). https://www.armscontrol.org/act/2019-01/news/us-conducts-special-open-skies-flight. Accessed January 19, 2021.
Kingston Reif and Shannon Bugos, "U.S. to Withdraw From Open Skies Treaty," Arms Control Today (June 2020). https://www.armscontrol.org/act/2020-06/news/us-withdraw-open-skies-treaty. Accessed January 19, 2021.

and Russian aircraft and vessels has become an important issue. At present, 11 NATO members have bilateral deconfliction agreements with Russia. While major European players prefer these bilateral channels, Eastern Europeans would like to see these efforts under a NATO umbrella. The implementation of these deconfliction measures, however, is very sporadic, and it mostly depends on the cost–benefit analysis of the Russian leadership.[216]

The problems of the arms control architecture were also visible in the nuclear domain due to U.S. and Russian withdrawal from the INF Treaty—the cornerstone of the European nuclear order since 1987. Washington officially accused Russia of violating the agreement in 2014, and Moscow reportedly[217] began deploying an INF noncompliant GLCM (the SSC-8) in 2017. While Europeans expressed their desire to maintain the treaty and find a diplomatic solution to the problem, the Trump administration announced withdrawal from the INF Treaty in early 2019, which officially collapsed in August 2019. Without the INF Treaty, Russia has a free pass to deploy both conventional and nuclear intermediate-range missile in its European territories. Meanwhile, NATO Secretary General Jens Stoltenberg clearly stated that European allies "don't have any intention to deploy new nuclear land-based weapon systems in Europe."[218] If this remains the case, the end of the INF Treaty will primarily benefit Russia.

While the West saw these measures as the foundation of a new cooperative security order, the arms control regime failed because Russia could not live with these rules. States only conclude arms control agreements if doing so fits their rationale and serves their interests. Russia has suspended many of these agreements or limited their implementation because they no longer support Moscow's interests. In the view of Russia's political elite, the early post-Cold War years were a period of weakness that NATO exploited. As Stephen Covington argued, "Putin's worldview has set a new purpose and identity for the Russian military, one built on the emotion of humiliation from the end of the Soviet Union."[219]

Despite the promises of the 1997 NATO–Russia Founding Act, Moscow felt marginalized.[220] The multiple rounds of NATO enlargement, the pre-positioning of NATO's military assets close to Russian borders, and the military buildup of the Alliance are all seen by Russian elites as serious security threats to Moscow's

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216 Gustav Gressel, *Under the Gun: Rearmament for Arms Control in Europe.*

217 Michael R. Gordon, "Russia Deploys Missile, Violating Treaty and Challenging Trump," *The New York Times* (February 14, 2017). https://www.nytimes.com/2017/02/14/world/europe/russia-cruise-missile-arms-control-treaty.html. Accessed January 19, 2021.

218 Radio Free Europe, "Stoltenberg: NATO Mulls Options In Post-INF World, Doesn't Want Arms Race With Russia" (February 13, 2019). https://www.rferl.org/a/stoltenberg-nato-mulls-options-in-post-inf-world-doesn-t-wants-arms-race-with-russia/29768184.html. Accessed January 19, 2021.

219 Stephen R. Covington, "The Culture of Strategic Thought Behind Russia's Modern Approaches to Warfare," p18.

220 Lawrence Livermore National Laboratory, Center for Global Security Research, "Compete, Deter, and Win in a Trans-Regional Perspective: On Meeting the New Challenges of Extended Deterrence," CGSR Workshop Summary (February 2019). https://cgsr.llnl.gov/content/assets/docs/ED_Bibliography_FEB2019_Final.pdf. Accessed January 19, 2021.

position, challenging its political and economic influence in the post-Soviet space.[221] These perceived threats are used by Russia to justify the actions it has taken to challenge the European security order that it previously accepted. This behavior is a symptom of a larger systemic problem. First, the political regime that President Putin constructed could not survive in the open system preferred by the West. As Evgeny Lukyanov, deputy secretary of Russia's Security Council, noted in 2014, "we need to sit down and renegotiate the entire post-Cold War settlement."[222] And second, President Putin's weakening regime needed strong enemies to sustain domestic support. These factors provide a sobering lesson for NATO on what is achievable in arms control and why Russia is unlikely to renegotiate some of the old mechanisms.

Over the past few years, Moscow has shown interest in arms control in only a few areas. One was the 2016 initiative by German Foreign Minister Frank-Walter Steinmeier, who proposed recreating zones of limited troop deployments in Europe. As Russia currently has a clear advantage in moving large numbers of troops quickly in a crisis, this limitation would mostly benefit them, and it could essentially divide Europe into a defensible area in the West, and an indefensible buffer zone in the East.[223] Russia has also shown interest in issues where it does not intend to compete (e.g., in deployed strategic nuclear capabilities), or in areas where it lags behind and capping U.S. technological advances would be beneficial (e.g., in ballistic missile defense deployments or in space-based weapons). Since the capabilities of the two sides are largely asymmetric and have strategic advantages in different domains, there is limited overlap between the areas NATO would consider crucial to limit and what Russia would be willing to engage on. Russia is not interested in limiting capabilities where it has a clear advantage over NATO or where lack of transparency provides operational advantages. Moscow has invested significantly in modernization of conventional forces, as well as new dual-capable missiles, launch platforms, and hybrid warfare capabilities. The military elite has bad memories of the 1990s, when many Russian systems were cut and the military was underfunded and disempowered. Therefore, it is unlikely that they would agree to limit or reduce these new systems.[224]

Another challenge is the lack of political commitment in Washington and Moscow. Under President Putin's leadership, the Kremlin has adopted a more assertive policy toward NATO, which rests on elements of surprise and unpredictability. This unpredictability is used by Russia to exert influence over its adversaries and seems to be a key element of its perception of escalation control. Since reviving current arms control mechanisms would limit these benefits, Russia is not interested in rebuilding the same architecture.

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221 Thomas Frear, Łukasz Kulesa and Denitsa Raynova, Russia and NATO: *How to overcome deterrence instability?*

222 Quoted in Brad Roberts, *On Theories of Victory, Red and Blue*, p10.

223 Gustav Gressel, *Under the Gun: Rearmament for Arms Control in Europe.*

224 Lawrence Livermore National Laboratory, Center for Global Security Research, "Compete, Deter, and Win in a Trans-Regional Perspective: On Meeting the New Challenges of Extended Deterrence."

Similarly, although NATO continues to emphasize that it remains open to dialogue with Russia, the Trump administration did not show leadership in diplomatic efforts to save arms control mechanisms, or in negotiating new cooperative measures. Due to the long list of treaty violations by Russia, Washington has put arms control solutions on the back burner, withdrawn from several agreements, and prioritized strengthening deterrence. These developments have led many analysts to argue that arms control has come to an end and has no validity in a security environment characterized by great power competition.

However, NATO—especially its European members—makes a strong connection between arms control and deterrence. Allies in Europe have been outspoken about their desire to see the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and the Fissile Material Cut-off Treaty (FMCT) enter into effect. They also want continued U.S. implementation of the OST, an updated Vienna Document, the INF Treaty revisited, and the New START Treaty extended.[225] Many European leaders are under domestic pressure to prioritize cooperative measures and limit defense spending (see chapters by Łukasz Kulesa, Michal Onderco, and Pia Fuhrhop). Continuing to strengthen the deterrence track will thus require measurable success in arms control. In the post-pandemic environment, it will be even harder to maintain domestic support for NATO's adaptation unless political leaders seriously commit to restoring the deterrence–arms control balance in Europe.

A New Balance of Deterrence and Arms Control in Europe

Despite the problems in NATO–Russia relations, the Alliance continues to implement the Harmel Report. Every summit communiqué since 2014 has emphasized that Alliance members "remain open for dialogue, and to a constructive relationship with Russia when Russia's actions make that possible."[226] At the same time, the Alliance does not have a dual-track strategy detailing the path towards a comprehensive political settlement in Europe aimed at reducing reliance on deterrence, thawing frozen conflicts in the peripheries, and rebuilding a new arms control architecture. Achieving such a comprehensive strategy will require further steps in deterrence and arms control as well.

On the deterrence track, if NATO wants to regain the initiative, it will need to revisit the entire spectrum of its deterrence posture. A renewed arms race, however, is not in the interest of either side. As Jessica Cox and Joseph Dobbs argue in this volume, "unrestrained arms races undermine strategic stability and make deterrence more difficult." NATO does not need to rush to parity in every capability. Instead, the Alliance should focus on those capability gaps that have a strong deterrence value in the early stages of a potential conflict. If NATO can deter a Russian conventional

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225 Heather Williams, "Europe's Nuclear Future: Deterrence and the Nuclear Ban Treaty, Center for Global Security Research Speaker Series (July 19, 2018). https://cgsr.llnl.gov/event-calendar/2018/2018-07-19. Accessed January 19, 2021.

226 North Atlantic Treaty Organization, "London Declaration."

attack, it averts the most likely scenario that would lead to nuclear escalation. The decision should be made in favor of those measures that have a better opportunity to complicate Russia's risk calculus about the chances of creating an easy and fast fait accompli.

Despite NATO's adaptation measures, allied forces in and around the most vulnerable eastern flanks are still at a quantitative disadvantage. The conventional superiority, combined with Russia's A2/AD capabilities in Kaliningrad and advanced Russian missile systems, are enough to challenge the Alliance.[227] In a crisis, deploying the entire NATO Response Force (NRF) would take several weeks; experts have estimated that it might take up to 30–45 days "from notice to movement" for the entire NRF.[228] Additional reinforcements could probably take much longer as even the more sophisticated military powers in Europe would find it challenging to set up a combat-ready heavy brigade within a short amount of time. Besides, the lack of adequate infrastructure—including the lack of an integrated railroad system in the East—would also make it difficult for NATO to mobilize.[229] These military challenges are further aggravated by potential political hurdles. Can the Alliance come to a consensus in a crisis? Even if there is a political consensus, how long would it take to make a decision and move the NRF? In some cases, approval from the national legislatures would also be needed.[230]

In light of these credibility issues around NATO's deterrence posture, there is a strong rationale to continue the adaptation that the Alliance started in Wales, Warsaw, Brussels, and London. The main dilemma for the future is finding the right balance between doing too little and doing too much. If the Alliance does not do more to change the situation along the borders, it could invite Russian aggression in a crisis. However, if NATO implements a posture that is too aggressive, it could also increase tensions with Russia and spiral into an arms race. So far, the Alliance has abided by the NATO–Russia Founding Act and the "four no's" policy—no intention, no plan and no requirement to deploy nuclear weapons or storage sites on the territory of new member states, and no permanent stationing of substantial combat forces.[231] NATO has also shown restraint by crafting its adaptation measures in ways that do not violate existing arms control agreements. At the Warsaw Summit, NATO reinforced its commitment to the NATO–Russia Founding Act. This framework should not be changed if the Alliance truly wants to avoid increasing tensions with Russia.

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227 Ibid.

228 Ulrich Kühn, *Preventing Escalation in the Baltics: A NATO Playbook.*

229 Ibid.

230 Thomas Frear, Łukasz Kulesa, and Denitsa Raynova, *Russia and NATO: How to overcome deterrence instability?*

231 The Alliance and Russia have never defined the meaning of "substantial," though NATO had an internal view in 1997 of what that might be. This number was much higher than what is currently deployed in the Baltic states and Poland. Interview with Steven Pifer on August 30, 2019 in Stanford, California.

There are three major aspects of continuing the adaption of NATO in the future. The first is deterrence and assurance. In this regard, the role of the United States is crucial for three reasons. First, it is the most capable military force in the Alliance; second, directly facing U.S. troops at the border would have the most robust deterrence effect on Russia; and third, it would also ensure that the White House cannot abandon its European allies in a crisis. Therefore, the rhetoric and the political decisions that Washington takes about European troops are directly relevant for the credibility of NATO's conventional deterrence. Additional deterrence options include the deployment of U.S. air defenses to somewhat mimic Russian A2/AD capabilities in the region. Offensive and defensive cyber capabilities also need to catch up to Russia, and the already-deployed multinational forces should be better integrated. Enhancing combat readiness around Europe is also necessary to make sure that, if needed, reinforcements can arrive in a timely manner. And finally, capacity and logistics should also be enhanced so that large-scale troops can be rapidly deployed anywhere in NATO Europe. These measures might prove to be enough to get Russia interested in an agreement on conventional forces and a new CSBM regime.

Moreover, there are additional capability gaps that should be addressed in electronic intelligence, surveillance, and reconnaissance to provide a fuller picture about Russian maneuvers during a crisis. If NATO decides to put more focus on deterrence by punishment, it could also turn to disruptive technologies like, for example, space observation and tracking systems, exoatmospheric interceptors, stealthy autonomous deep-strike drones, or hypersonic cruise missiles. These could increase insecurity in Moscow.[232]

For NATO, the elephant in the room is its nuclear posture. The Alliance needs to think more about its strategy to deal with nuclear threats, and ways to dissuade Russia from using nuclear weapons. Over the past few years, NATO has emphasized that any use of nuclear weapons would fundamentally change the nature of a conflict. It has started to emphasize the nuclear component behind conventional deterrence measures. However, NATO should do more to disabuse Moscow of any notion that it can use nuclear weapons and escape nuclear retaliation.

The Alliance can display collective nuclear resolve in many ways: the continuation and modernization of nuclear sharing arrangements (i.e., including more states in conventional support tasks), high readiness of nuclear forces in Europe and the strategic nuclear capabilities of the P3, adaptive planning, coordination of messaging, and conduct of more exercises with nuclear capabilities. In declaratory policy, NATO should also be more open about its nuclear capabilities and explain the significance of its nuclear sharing arrangements to its publics. As the other chapters in this volume show, there is a notable antinuclear movement in many European states, which makes it difficult to have a balanced discussion about nuclear deterrence. More transparency around the B61 gravity bombs and their contribution to deterrence is important for

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232 Gustav Gressel, *Under the Gun: Rearmament for Arms Control in Europe.*

domestic reasons—it may alleviate the political pressure from antinuclear groups and pave the way for a more balanced debate.

The second area where NATO can improve is in exercises and signaling. In this regard, NATO should do more to exercise conventional defense against a nuclear state. The Alliance should also conduct more nuclear exercises—for example, practicing release procedures for NATO nuclear weapons, or conducting more SNOWCAT (Support of Nuclear Operations With Conventional Air Tactics) training in cooperation with countries that are not involved in the nuclear sharing agreements. Conventional reinforcements will have a limited value if they are not integrated and if Russia does not believe that NATO is ready to use the entire range of capabilities in a crisis. Deterrence is strongest when these capabilities are regularly demonstrated. A key step is to exercise in unexpected domains and organize more cross-service training.

NATO should also continue to increase maneuvering and signaling activities in the eastern flanks, and place more emphasis on rapidly moving large amounts of troops. Trident Juncture, for example, took three years to prepare—in sharp contrast with Russian exercise routines, where some snap exercises are prepared within only a few days. There is no need to fully copy Russian practices, but some of these steps could enhance the credibility of NATO's deterrence posture. Besides, if NATO wants to limit Russian nuclear coercion, and it concluded that the B61 gravity bombs in Europe support that goal, it should signal this to Moscow by enhancing the readiness of the dual-capable aircraft, and regularly involve them in exercises.

And finally, resilience. Today's space and cyber capabilities carry an inherent risk of escalation during a crisis. The heavy reliance on information technology makes cyber and counterspace attacks highly valuable in a crisis, providing significant advantages to the side that strikes first.[233] Therefore, NATO should invest more in increasing its civilian and military resilience against Russia to minimize the risks of cross-domain escalation by non-kinetic attacks. Russia has also demonstrated in Crimea the power of propaganda and disinformation. NATO should pay more attention to the ethnic Russian populations in the Baltic states and increase their resilience to Moscow's hybrid warfare tools, limiting Russia's ability to create unrest within NATO.

On the arms control track, there are also a number of steps that could stabilize relations and pave the way towards a broader political settlement with Russia in the long run. Over the past few years, the arms control strategy of the Alliance was built on the following principles: enforcing compliance with existing agreements, calling out violators and addressing noncompliance, supporting strategic nuclear reductions, and seeking to limit nonstrategic nuclear weapons. However, NATO cannot forget that Russia violated its arms control obligations because these agreements no longer served its national security interests—simply reinstating past agreements is not likely

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233 James N. Miller Jr. and Richard Fontaines, *A New Era in U.S.–Russian Strategic Stability—How Changing Geopolitics and Emerging Technologies are Reshaping Pathways to Crisis and Conflict,* Center for a New American Security (September 2017). https://s3.amazonaws.com/files.cnas.org/documents/CNASReport-ProjectPathways-Finalb.pdf?mtime=20170918101505. Accessed January 19, 2021.

to bring a different outcome. The Alliance needs to understand the pattern of Russian violations and identify where mutual interests remain. Success in arms control and risk-reduction measures will be key to continuing the adaptation of the Alliance.

In order to avoid misunderstandings about NATO's intentions, the Alliance should continue to communicate clearly (as it has in the past) that its deterrence measures are defensive and that it remains open to arms control with a willing partner. In this area, there is an opportunity for Europeans to take the lead and be constructive negotiating partners alongside Washington and Moscow. Many European leaders have emphasized that they consider arms control measures part of the solution.[234] Sweden has recently taken an active role in risk-reduction efforts. The U.K. House of Lords has called for greater European leadership in arms control and risk reduction, Germany presented its own proposal to the OSCE to adjust the Vienna Document in October 2019,[235] and French President Emmanuel Macron has also emphasized the role of arms control for security and stability in a February 2020 speech.

For these European initiatives to succeed, it will be crucial to agree on a common approach. Part of the reason the 2016 Steinmeier initiative and the 2015 Polish efforts to adapt the Vienna Document failed to bring any major change is that they lacked European consensus. Europe needs to decide what it wants to achieve vis-à-vis Russia and put an arms control proposal on the table that is realistic in the current security environment, one that builds on the sobering lessons of Russia's past behavior. As it is unlikely that Russia would negotiate anything without the participation of the United States, European allies also need to synchronize their ambitions with Washington.

At present, rebuilding the entire European security order is unrealistic because achieving consensus among all OSCE member states is unlikely. From a NATO perspective, reintroducing zonal/flank troop limits is impractical, as it would favor the side that is capable of moving its forces faster.[236] But there are several transparency measures that could be beneficial. Especially in the border areas, it would be desirable to announce all maneuvers and troop movements. In order to minimize the risk of accidents, NATO and Russia could also work on a code of conduct for air and maritime systems.[237] Crisis management procedures should be incorporated in both sides' deterrence postures, and NATO and Russia should strengthen the political–military and military-to-military channels of communication for effective crisis management. In the spirit of the dual-track decision, the Alliance should also make it clear that it is willing to offer concessions on some deterrence measures if Russia

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234 Heather Williams, "Europe's Nuclear Future: Deterrence and the Nuclear Ban Treaty."

235 German Federal Foreign Office, "Germany presents proposals to the OSCE on adjusting the Vienna Document" (October 23, 2019). https://www.auswaertiges-amt.de/en/newsroom/news/annen-vienna-document-osce/2259666. Accessed January 19, 2021.

236 Wolfgang Richter, "Sub-regional Arms Control for the Baltics: What Is Desirable? What Is Feasible?," Institute for Peace Research and Security Policy at the University of Hamburg (2016). http://deepcuts.org/images/PDF/DeepCuts_WP8_Richter_UK.pdf. Accessed January 19, 2021.

237 Gustav Gressel, *Under the Gun: Rearmament for Arms Control in Europe.*

is willing to return to the table, engage on conventional arms control in Europe, and address the issue of intermediate-range missiles. In the aftermath of the COVID-19 crisis, governments will probably prioritize investments in economic recovery and social programs, which creates an even stronger need to adjust the deterrence–arms control balance and revitalize cooperative efforts with Russia in areas where they are willing to cooperate in good faith.

Conclusion

Since the annexation of Crimea, NATO has started a serious adaptation of its forces in response to the renewed Russia threat along its eastern borders. These steps, however, were mostly reactive, and left the initiative with Moscow. In parallel, Russia has also challenged the existing arms control architecture, and its treaty violations led to a number of withdrawals by the United States. If NATO wants to retake leadership on both issues, it should return to the logic of the dual-track decision. Such a move could strengthen Alliance unity and it could also help to restore stability in Europe. Since the Harmel Report, NATO's strategic thinking has always incorporated the twin pillars of deterrence and political détente. At the same time, the Alliance does not have a comprehensive dual-track strategy today. By developing a new dual-track approach, NATO could use the deployment track to incentivize Russian cooperation in arms control.

In the current security environment, the most important difference in comparison to the Cold War formula is that the deployment track should not be focused on nuclear capabilities. If NATO wants to strengthen peace in Europe, it needs to show a stronger willingness to deter Russia with the entire spectrum of capabilities. Today, there is a heightened risk that a smaller military incident, a non-kinetic operation, or a simple misunderstanding could lead to a crisis with escalation dynamics that neither side will be able to control.

In a crisis, Russia believes that it has a certain level of escalation control due to the tools of nuclear coercion. The Trump administration addressed this challenge by trying to fill the capability gap with more low-yield nuclear options. But effectively assuring the allies and deterring nuclear coercion is not only a capability problem. While there are political doubts about the seriousness of the U.S. administration's security assurances towards its allies, additional nuclear capabilities will not be enough to reassure Europe. Besides, a nuclear solution leaves many gaps open in the lower tiers of conflict. Neither Russia nor the United States can be certain that once the nuclear threshold is crossed, escalation can be controlled, and there will be a winner in the end. Therefore, they should focus their attention on preventing the emergence of a crisis in the first place.

As Russian confidence is partly built on its military superiority along the border areas and its ability to deny NATO viable military options, NATO should continue the investments in its nonnuclear tool kit and combine its deterrence strategy with a renewed focus on cooperative measures. In order to avoid misunderstandings, NATO

needs to balance its reinforcements with a certain level of restraint. In the eyes of Europeans, the success of NATO's adaptation is also linked to a strong arms control agenda. Continued domestic support for deterrence will require a return to dialogue, and a revival of the arms control mechanisms. In this regard, European governments have an opportunity to step up and define the new parameters of the balancing act.

Restoring the Balancing Act: Disarmament and Deterrence in the New Era
Łukasz Kulesa

Introduction

A fragile, and frequently contested, balancing act between the seemingly incompatible concepts of nuclear deterrence and disarmament has been practiced by NATO member states since the 1970s. It boils down to two elements: preserving the policy of nuclear deterrence and, simultaneously, supporting reductions in the number and salience of nuclear weapons. In recent years, however, the credibility and effectiveness of this approach has come under strain. While the necessity of strengthening nuclear deterrence is highlighted by NATO and its member states— mostly in the context of recent Russian activities—the other element of the balancing act has taken a back seat. The bilateral U.S.–Russian process leading to nuclear arms reductions has stalled, and there is little, if any, movement on multilateral disarmament initiatives that NATO states could claim as a success.

The United States has recently attempted to present its own take on the balancing act, suggesting to focus less on nuclear reductions and more on risk reduction, and on creating the conducive general environment for disarmament. These adjustments, however, may be inadequate to address the international and internal criticism that the United States and other NATO members have tilted too much towards nuclear deterrence, or even nuclear warfighting. Correction of the course is needed. Without restoring a credible deterrence–disarmament balancing act, it may be increasingly difficult to maintain the international support for the nonproliferation regime centered around the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Shattering the balance may also make it more challenging to preserve internal support for continued engagement in maintaining a nuclear deterrence posture in some NATO countries.

The future direction of U.S. policy will be decisive for reestablishing a sense of balance. The United States does not need to shift into reverse gear and embrace the humanitarian discourse on nuclear disarmament. But preserving the existing nonproliferation and arms control instruments would be a good starting point. Beyond that, presenting a coherent set of substantial arms control initiatives engaging not only its potential adversaries, but also its European allies, looking into the scope of the nuclear modernization programs, and reviewing the U.S. narrative about the relationship between deterrence and disarmament might help to return to the imperfect, but effective balancing act of the past.

Deterrence and Disarmament

Based on an interpretation of the NPT and its Article VI, a particular approach to the relationship between deterrence and nuclear disarmament has emerged since the

1970s and has been subsequently perfected, especially since the end of the Cold War. This balancing act involves two main elements. On the one hand, there is declaration of support for the goal of nuclear disarmament enshrined in Article VI. This is followed, however, by the argument about the need to take a long-term view on the issue and engage in a process of gradually limiting reliance on nuclear weapons and nuclear deterrence, as well as reducing the numbers, and thus moving closer to the final goal. For example, U.S.–Soviet (later U.S.–Russian) strategic arms reduction treaties were presented by the two superpowers at the NPT forum as a sign of ending the nuclear arms race and evidence of progress towards disarmament.

On the other hand, there is the assumption that throughout the whole process, nuclear deterrence would remain relevant as a mechanism for assuring the security of those who possess nuclear weapons and their allies, even as the overall importance of these weapons and their place in the deterrence mix were to be gradually scaled down. Importantly, the NPT itself did not touch upon nuclear deterrence policy as such. Its recognition of a group of nuclear weapon states (NWS), its negotiating records, and the fact that U.S.–Soviet negotiations on the treaty focused not on deterrence as such, but on preventing further proliferation and on the modalities of extended nuclear deterrence arrangements within NATO and the Warsaw Pact. This focus points to the conclusion that the NPT does not prohibit NWS from maintaining nuclear deterrence as a tool of their security policy or from extending nuclear deterrence to its allies.[238]

Ultimately, all NWS have adopted their variants of the balancing act. As put in the U.K.'s 1998 Strategic Defence Review White Paper, "The Government wishes to see a safer world in which there is no place for nuclear weapons… Nevertheless, while large nuclear arsenals and risks of proliferation remain, our minimum deterrent remains a necessary element of our security."[239] The Russian Federation's Working Paper on nuclear disarmament, submitted in 2019 as part of the NPT Review process, similarly proclaims support for "incremental" nuclear disarmament efforts, but it notes that "for Russia, the possession of such weapons is a necessity and the only possible response to very specific external threats."[240] Perhaps most famously, the balancing act was summarized by President Barack Obama in 2009 in Prague. He began the relevant passage of his speech by reinforcing "clearly and with conviction" the U.S. commitment to "seek the peace and security of a world without nuclear weapons," but ended it with

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238 See, e.g., Gregory F. Giles, "Deterrence and the NPT: Compatible and Reinforcing," *Survival* 62, no. 4 (2020), p135–156. and William Alberque, *The NPT and the Origins of NATO's Nuclear Sharing Arrangements*, Ifri Proliferation Papers No. 57 (February 2017). https://www.ifri.org/sites/default/files/atoms/files/alberque_npt_origins_nato_nuclear_2017.pdf. Accessed January 19, 2021.

239 U.K. Secretary of State for Defence, "Strategic Defence Review White Paper," presented to the Parliament by the Secretary of State for Defence (July 1998), p24. http://fissilematerials.org/library/mod98.pdf. Accessed January 19, 2021.

240 "Nuclear disarmament," working paper submitted by the Russian Federation, Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2020/PC.III/WP.6, 1 (March 2019).

the observation that" as long as these weapons exist, the United States will maintain a safe, secure and effective arsenal."[241]

The balancing act approach has also become a long-standing tenet of NATO policy.[242] In its current formulation, NATO concurrently declares commitment to the world free of nuclear weapons and asserts that "as long as nuclear weapons exist, NATO will remain a nuclear alliance."[243] In addition, NATO highlights that disarmament is a process in which all member states have played a role, points to the steep reductions of nuclear weapons committed to NATO in comparison to pre-1989 levels, and pledges to take "further practical steps and effective measures to foster nuclear disarmament."[244]

The balancing act provided an underlying rationale for the "step-by-step" or progressive approach to nuclear disarmament.[245] Its impact was visible in the reductions of nuclear arsenals in the post-Cold War period, based partly on U.S.–Russian arms control agreements and also on the unilateral decisions of NWS. These measures helped to assure the successful outcomes of the 1995, 2000, and 2010 NPT Review Conferences, which included specific disarmament-related steps collated in the Principles and Objectives (1995), the Thirteen Steps (2000), and the Action Plan (2010).

The balancing act has been frequently criticized as a distortion of the "bargain" allegedly struck during the negotiations over the NPT regarding genuine progress towards disarmament, or even a ruse used by the NWS and their supporters to avoid fulfilling in good faith their obligations and maintain their dependence on the practice of nuclear deterrence.[246] However, as long as the basic outlines of the policy of moving forward on disarmament-related moves and decreasing reliance on nuclear weapons were effective, it remained the dominant paradigm for the functioning of the NPT-centered nuclear order and a justification behind the deterrence and arms control policies of the U.S. and NATO. It was also broadly accepted by Russia, and at least tacitly acknowledged by China [e.g., through its signing of the Comprehensive Test Ban Treaty (CTBT)].

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241 Barack Obama, "Remarks By President Barack Obama in Prague As Delivered," The White House, Office of the Press Secretary (April 5, 2009). https://obamawhitehouse.archives.gov/the-press-office/remarks-president-barack-obama-prague-delivered. Accessed January 19, 2021.

242 See the contribution on NATO by Jessica Cox and Joseph Dobbs in this volume.

243 North Atlantic Treaty Organization, "Deterrence and Defence Posture Review," press release (May 20, 2012). https://www.nato.int/cps/en/natohq/official_texts_87597.htm. Accessed January 19, 2021.

244 North Atlantic Treaty Organization, "North Atlantic Council Statement on the 50th Anniversary of the Treaty on the Non-Proliferation of Nuclear Weapons" (March 5, 2020). https://www.nato.int/cps/en/natohq/official_texts_174104.htm. Accessed January 19, 2021.

245 See, e.g., John Carlson, "Is the NPT Still Relevant? – How to Progress the NPT's Disarmament Provisions," *Journal for Peace and Nuclear Disarmament* 2, no. 1 (2019), p97–113.

246 Paul Meyer, "Creating an Environment for Nuclear Disarmament: Striding Forward or Stepping Back?," *Arms Control Today* (April 2019). https://www.armscontrol.org/act/2019-04/features/creating-environment-nuclear-disarmament-striding-forward-stepping-back. Accessed January 19, 2021.

Challenges to the Balancing Act

The last few years brought a number of challenges to the long-established approach to the disarmament–deterrence relationship. First, several elements of the step-by-step agenda based on it became bogged down in disagreements between the nuclear weapon states, including the CTBT's entry into force and the commencement of negotiations of the Fissile Material Cut-off Treaty (FMCT). Apart from the implementation of the New START Treaty, there have been recently no further negotiated or unilateral reductions of nuclear weapon stockpiles or any limitations in the weapons' operational status. Ray Acheson, director of the Reaching Critical Will program, described the step-by-step agenda as merely "piles of commitments made over many years"[247] and Brad Roberts, a former U.S. Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy, suggested that the approach has "lost credibility."[248]

Second, the annexation of Crimea, the increase of tensions between Russia and the U.S. and NATO, as well as between the U.S. and China, made nuclear deterrence again an important part of national and NATO strategies, and brought great power competition back to the forefront. It also brought a revival of concerns about the credibility of the existing nuclear strategies and postures and, subsequently, about moves to adjust them to the new realities. This included the Russian decision to counter the alleged threat of U.S. conventional strike and its investments in missile defense with a range of new nuclear weapon systems, including INF-range land-based cruise missiles. The 2018 U.S. Nuclear Posture Review, in turn, cited the need to address the threat of nuclear coercion or limited nuclear weapon use by Russia or China as a reason for deploying two additional sea-based nuclear weapon systems (a low-yield warhead for the Trident submarine-launched ballistic missiles and a nuclear sea-launched cruise missile). The reported Chinese discussions about the rationale of maintaining a no-first-use policy and its minimum deterrence posture also point to a likely internal review of the existing policies.[249] Importantly, both the Russian and U.S. decisions will result in the introduction of more diverse nuclear capabilities, contradicting one of the assumptions of the old balancing act approach—a steady move towards reducing the number of available nuclear systems.

Third, a new alternative to the disarmament–deterrence balancing act has emerged in the form of the nuclear prohibition treaty movement, based on the humanitarian narrative. This approach has unanimously and forcefully rejected nuclear deterrence as both dangerous and unethical, and opted for a direct stigmatization of nuclear

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247 Ray Acheson, "Editorial: Moving the nuclear football, from 1946 to 2019," NPT News in Review 16, no. 2 (May 2, 2019). https://reachingcriticalwill.org/disarmament-fora/npt/2019/nir/13679-npt-news-in-review-vol-16-no-2. Accessed January 19, 2021.

248 U.K. House of Lords, "Rising nuclear risks, disarmament and the Nuclear Non-Proliferation Treaty," report of the Select Committee on International Relations, HL Paper 338 (April 24, 2019), p44. https://publications.parliament.uk/pa/ld201719/ldselect/ldintrel/338/338.pdf. Accessed January 19, 2021.

249 Liping Xia, "China's Nuclear Doctrine: Debates and Evolution, Carnegie Endowment for International Peace," Regional Insight (June 30, 2016). https://carnegieendowment.org/2016/06/30/china-s-nuclear-doctrine-debates-and-evolution-pub-63967. Accessed January 19, 2021.

weapons.[250] The 2017 Treaty on the Prohibition of Nuclear Weapons (TPNW) includes a specific provision banning the threat to use nuclear weapons, which lies at the heart of the nuclear deterrence concept.[251] This makes it highly problematic not only for nuclear-armed states, but also for nonnuclear NATO countries participating in shaping the Alliance's nuclear policy to sign the treaty or support such an approach.[252] The humanitarian debate also allowed supporters of the TPNW to draw public attention to what they see as the fallacies of nuclear deterrence, such as the overreliance on the assumption of rationality, the danger of miscalculation, the possibility of accidents or inadvertent escalation and nuclear use, or the discounting of risks connected to the interplay of nuclear and nonnuclear capabilities.

Taken together, these challenges have made preserving the traditional balancing act increasingly difficult. They have fueled divisions in the international community between proponents of strengthening nuclear deterrence (justified by deterioration of the security environment) and those rejecting it in the name of nuclear disarmament. That has put an additional strain on the maintenance of the NPT-centered nuclear order, with widespread expectations that the next NPT Review Conference will likely fail to agree on a substantive outcome document.[253] The delay of the meeting until 2021 makes the prospects of bridging the gap on disarmament–deterrence matters only marginally better.[254]

A New Balancing Act in the Making?

In response to these challenges, there have been some interrelated and partly overlapping attempts to reformulate the approach to deterrence and disarmament. Two of them—one centered on nuclear risk reduction and one on creating the environment conducive to nuclear disarmament—are based on the assumption that the scope for reaching progress under the step-by-step approach is limited, and decisive moves towards nuclear disarmament are not possible under the current circumstances. Proposals and ideas under these two approaches essentially assume the continued maintenance of nuclear deterrence and sideline the issue of reductions. The third recent proposal, the "stepping stones" initiative, incorporates some of the risk-reduction

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250 See, e.g., Mitsuru Kurosawa, "Stigmatizing and Delegitimizing Nuclear Weapons," *Journal for Peace and Nuclear Disarmament* 1, no. 1 (2018), p32–48; Paul Meyer, "The Mirage of Nuclear Deterrence—Lessons for Allies," in: *UNIDIR, The NPT and the Prohibition Negotiation: Scope for Bridge-building* (Geneva: UNIDIR, May 2017). https://unidir.org/files/publications/pdfs/the-npt-and-the-prohibition-negotiation-en-682.pdf. Accessed January 19, 2021.

251 *Treaty on the Prohibition of Nuclear Weapons*, Article 1 (d).

252 For a contrary argument, see Kjølv Egeland, "Arms, Influence and the Treaty on the Prohibition of Nuclear Weapons," *Survival* 61, no. 3 (2019), p57–80. https://doi.org/10.1080/00396338.2019.1614786. Accessed January 19, 2021.

253 See, e.g., Edward Ifft, "Mapping the fault lines for the 2020 NPT Review Conference," European Leadership Network (February 6, 2020). https://www.europeanleadershipnetwork.org/commentary/mapping-the-fault-lines-for-the-2020-npt-review-conference/. Accessed January 19, 2021.

254 Argument made, e.g., in: Benjamin Hautecouverture, Nuclear Planet: the NPT and Covid-19, Fondation pour la Recherche Strategique, Note 46/20 (June 2, 2020). https://www.frstrategie.org/sites/default/files/documents/publications/notes/2020/202046.pdf. Accessed January 19, 2021.

proposals, but adds a reformulation and refreshment of the step-by-step approach, all of which are supposed to "put us back on the road to nuclear disarmament."[255]

The first attempt at rethinking the balancing act focuses on risk reduction. The last few years have brought renewed interest in nuclear risk-reduction measures, including from the nuclear weapon states.[256] A broad range of measures is suggested under the risk-reduction aegis, falling—according to a seminal study from the United Nations Institute for Disarmament Research (UNIDIR)—under the rubrics of (1) political and doctrinal commitments, (2) "strategic considerations" (e.g., agreements not to attack certain targets or interfere with certain capabilities), (3) changed operational procedures, and (4) bolstered engagement and transparency measures.[257] The 2019 G7 statement on nonproliferation and disarmament lists as risk-reduction measures "transparency and dialogue on nuclear doctrines and postures, military-to-military dialogues, hotline agreements among nuclear weapon possessors, 'accident measure' agreements, transparency, and notification exercises, as well as missile launch notification and other data exchange agreements."[258] Nuclear risk reductions have also taken a prominent role in the so-called P5 process.[259] Their appeal may be connected with the fact that, from the nuclear weapon states' perspective, risk reduction seems to be about making nuclear deterrence safer, not undermining it. The aims seem to be minimizing the threat of accidental, unauthorized, or inadvertent use of weapons, narrowing down the scenarios in which nuclear weapons can be used intentionally, and increasing the time for deterrence to be reestablished during a crisis or conflict between nuclear weapon states.

Another potential avenue for reformulating the deterrence–disarmament balancing act was suggested by the United States in 2018. The initiative, which ultimately came to be known as Creating an Environment for Nuclear Disarmament (CEND), proposed to focus the attention on the status of international security, and identifying the specific conditions which would make the security environment stable enough for the nuclear possessors and their allies to allow progress on nuclear disarmament.[260] As explained

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255 "The NPT at 50: Advancing Nuclear Disarmament, Securing Our Future," Press Release by the Ministers of Argentina, Canada, Finland, Germany, Indonesia, Japan, Jordan, Kazakhstan, the Netherlands, New Zealand, Norway, the Republic of Korea, Spain, Sweden, and Switzerland (February 25, 2020). https://www.auswaertiges-amt.de/en/newsroom/news/npt-50/2310112. Accessed January 19, 2021.

256 Nuclear risk-reduction measures are defined as "decreasing the possibility that nuclear weapons are used, whether deliberately or inadvertently" in: Wilfred Wan, *Nuclear Risk Reduction: the State of Ideas* (Geneva: UNIDIR, 2019), p2.

257 Wilfred Wan (Ed.), *Nuclear Risk Reduction: Closing Pathways to Use* (Geneva: UNIDIR, 2020).

258 "2019 G7 Statement on Non-Proliferation and Disarmament" (April 6, 2019), paragraph 23. http://www.g7.utoronto.ca/foreign/190406-disarmament.html#III. Accessed January 19, 2021.

259 See, e.g., Shatabhisha Shetty and Heather Williams, *The P5 Process: Opportunities for Success in the NPT Review Conference*, The Centre for Science and Security Studies, King's College London and the European Leadership Network (June 2020). https://www.europeanleadershipnetwork.org/wp-content/uploads/2020/06/P5-Process-Report_Final.pdf. Accessed January 19, 2021.

260 Lyndon Burford, Oliver Meier and Nick Ritchie, "Sidetrack or kickstart? How to respond to the US proposal on nuclear disarmament," *Bulletin of the Atomic Scientists* (April, 19 2019). https://thebulletin.org/2019/04/sidetrack-or-kickstart-how-to-respond-to-the-us-proposal-on-nuclear-disarmament/. Accessed January 19, 2021.

by U.S. Assistant Secretary of State Christopher Ford, the thinking underlying the initiative is that the previous "sterile" discourse focused on identifying next steps towards nuclear disarmament (including numerical reduction agreements) ignored the "underlying security concerns that have made the retention of nuclear weapons necessary to forestall major power conflict and maintain strategic stability."[261] It was thus necessary to put the emphasis on easing international tensions and reducing conflicts, and making sure that steps towards disarmament would not decrease the security of the possessors and their allies, and end up being destabilizing.

The United States suggested establishing a process engaging states interested in developing the new approach further. Such a formulation proved to be acceptable to all other NPT nuclear weapon states and some nuclear possessors from outside the NPT that participated in the discussions: India, Pakistan, and Israel.[262] As of mid-2020, the CEND has held two plenary sessions, for the second session bringing together representatives from 31 countries for informal discussions. They agreed on a program of work involving three subgroups on threat perceptions, increasing the effectiveness of existing nonproliferation and disarmament institutions, and nuclear risk reduction.[263] Yet, until the CEND produces specific proposals on disarmament, it is vulnerable to accusations from some nonparticipants that its main purpose is to delay action and engage in discussion for discussions' sake.

Finally, the "stepping stones" or Stockholm Initiative on Nuclear Disarmament brings together a group of 15 nonnuclear weapon states, including NATO members and U.S. extended nuclear deterrence partners in Asia.[264] Devised as a diplomatic vehicle towards strengthening the NPT and increasing the chances of success of the 2020 Review Conference, the initiative took as point of departure the past disarmament commitments and suggested a set of "short-term, meaningful, and achievable measures reinforcing the NPT and its implementation."[265] Most of these measures have already been suggested under the step-by-step approach and included in previous NPT Review Conference outcome documents. However, they have been reviewed, partly broken down into more "actionable" measures, and modified to reflect the political and diplomatic developments and the overall worsening of the security environment. Recognizing the

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261 "Creating the Conditions for Nuclear Disarmament (CCND)," working paper submitted by the United States, Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2020/PC.II/WP.30, 1 (April 18, 2018).

262 U.S. State Department, "Creating an Environment for Nuclear Disarmament Working Group Meets in Wilton Park," press release, Bureau of International Security and Nonproliferation (November 27, 2019).

263 Shannon Bugos, "CEND Establishes Two-Year Work Program," *Arms Control Today* (January/February 2020). https://www.armscontrol.org/act/2020-01/news/cend-establishes-two-year-work-program. Accessed January 19, 2021.

264 "Ministerial Declaration," The Stockholm Ministerial Meeting on Nuclear Disarmament and the Non-Proliferation Treaty, Stockholm (June 11, 2019). https://www.government.se/statements/2019/06/the-stockholm-ministerial-meeting-on-nuclear-disarmament-and-the-non-proliferation-treaty/. Accessed January 19, 2021.

265 "The NPT at 50: Advancing Nuclear Disarmament, Securing Our Future," Press Release by the Ministers of Argentina, Canada, Finland, Germany, Indonesia, Japan, Jordan, Kazakhstan, the Netherlands, New Zealand, Norway, the Republic of Korea, Spain, Sweden, and Switzerland.

continued dependence of NWS and their allies on nuclear deterrence but aiming to limit it and revive the disarmament track, the Stockholm Initiative's approach seems to be the closest to the original balancing act.[266]

Towards a Synthesis of the Old and the New?

The balancing act approach can be criticized as an insincere attempt to have the best of the two worlds in the contemporary nuclear order: enjoy the (assumed) security benefits of nuclear deterrence, and, at the same time, stay faithful to the goal of nuclear disarmament. Yet, for a number of states, including many NATO members, it remains the basis of their security policy in the nuclear area. They are therefore interested in at least maintaining, and if possible, increasing its credibility. For this approach to work, however, the way in which the balancing act is formulated matters. To paraphrase Theodore Parker, the arc of the balancing act may be long, but it either bends toward continued possession of nuclear weapons, or towards nuclear disarmament. The Trump administration appeared to favor the former logic. For a number of U.S. allies, for example, Germany (see Pia Fuhrhop on the German nuclear debate), and for the U.S. Democratic Party, the latter seems to be preferable. The Party's 2020 electoral platform expressed that the Democrats "believe" that the U.S. has a "moral responsibility and national security imperative" to prevent proliferation and "eventually secure elimination" of nuclear weapons.[267]

In this respect, the U.S. decision under the Trump administration to focus almost solely on strengthening nuclear deterrence and, to de facto abandon its attachment to the traditional disarmament side of the balancing act, was troubling. A number of the Trump administration's policy decisions regarding the strengthening of the U.S. nuclear posture and the dismantlement of arms control and nonproliferation arrangements were problematic, including the exit from the Joint Comprehensive Plan of Action (JCPOA), the INF Treaty, the Open Skies Treaty, lack of clarity on New START extension, and the rejection of the CTBT. Even if some of these steps were more defensible on national security grounds than others, the Trump administration's attitude could be interpreted as a retreat from the previous, balanced policy course. Efforts such as the CEND or concept papers about trilateral and "next-generation arms control"[268] increasingly looked like "sidetracking" and not as genuine efforts to synchronize U.S. policy with its disarmament obligations and the views of its allies and partners.[269] Recent reports

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266 Ann Linde, "Swedish Initiative Aims to Strengthen the NPT," *Arms Control Today* (March 2020). https://www.armscontrol.org/act/2020-03/features/swedish-initiative-aims-strengthen-npt. Accessed January 19, 2021.

267 U.S. Democratic National Convention, "2020 Democratic Party Platform" (2020). https://www.demconvention.com/wp-content/uploads/2020/08/2020-07-31-Democratic-Party-Platform-For-Distribution.pdf. Accessed January 19, 2021.

268 Christopher A. Ford, "Arms Control and Disarmament: Adjusting to a New Era," *Arms Control and International Security Papers* 1, no. 7 (May 20, 2020). https://www.state.gov/wp-content/uploads/2020/05/T-Paper-series-Sandia-Disarmament-Retrospective-.pdf. Accessed January 19, 2021.

269 Lyndon Burford, Oliver Meier, and Nick Ritchie, "Sidetrack or kickstart? How to respond to the US proposal on nuclear disarmament," *Bulletin of the Atomic Scientists* (April 19, 2019). https://thebulletin.org/2019/04/sidetrack-or-kickstart-how-to-respond-to-the-us-proposal-on-nuclear-disarmament/. Accessed February 5, 2021.

about discussions within the Trump administration on the resumption of nuclear testing seem to confirm that the administration's policy was decisively leaning towards the primacy of nuclear deterrence.[270] Internal U.S. opposition to the resumption of testing, including in Congress, may, however, have signalled that the traditional balancing act still has considerable support in the U.S. policy debate.

The existing imbalance may become a growing challenge for some NATO countries, especially those whose publics expect a certain degree of activity on arms control and disarmament issues. For a number of European allies, reaching progress towards nuclear disarmament provides a part of their own balancing act: a package-deal approach to security policy that enjoys a broad internal political consensus. The other part of the package is the possession of weapons (the U.K.) or active engagement (e.g., Germany, the Netherlands, Belgium) in NATO's nuclear sharing policy. The weakening of one part of this policy construct makes the construction unstable—as the renewed German discussion about its participation in NATO nuclear sharing indicates.[271] If some of the allies express increased unease about U.S. nuclear policy, this becomes a problem not only for the bilateral relationship, but also for the credibility of NATO's approach to deterrence and disarmament.

The deterrence–disarmament balancing act cannot be credibly restored without a change of attitude of the United States. U.S. allies and partners are willing to rally around the United States to promote and defend a reasonable balancing act, but most of them expect it to involve both a recognition of the necessity of nuclear deterrence and tangible moves towards nuclear disarmament. The renewed balancing act and strong consensus around it (including in NATO) is achievable. It does not need to look dramatically different from the old one. New fora such as CEND and/or the Stockholm Initiative can generate discussion and interesting ideas, but there will be a need to reconcile both approaches they represent.[272] The deterioration of relations among the main nuclear possessors must be taken into account, but this cannot become an excuse for not engaging in efforts towards implementing at least some of the stepping stones or step-by-step agenda proposals.

Such a fusion of ideas would also provide NATO countries and other U.S. allies with stronger arguments when engaging the critics of their policy and the balancing act as such. Activists and countries strongly rejecting nuclear deterrence policy, including TPNW signatories, will not become convinced of the merits of this approach. However, the current U.S. emphasis on nuclear deterrence means that several other NPT countries, who until recently tacitly accepted the balancing act, may no longer treat

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270 Julian Borger, "US security officials 'considered return to nuclear testing' after 28-year hiatus," *The Guardian* (May 23, 2020). https://www.theguardian.com/world/2020/may/23/us-security-officials-considered-return-to-nuclear-testing-after-28-year-hiatus. Accessed January 19, 2021.

271 Oliver Meier, "German Politicians Renew Nuclear Basing Debate," *Arms Control Today* (June 2020). https://www.armscontrol.org/act/2020-06/news/german-politicians-renew-nuclear-basing-debate. Accessed January 19, 2021.

272 Heather Williams, "CEND and a changing global nuclear order," European Leadership Network (February 18, 2020). https://www.europeanleadershipnetwork.org/commentary/cend-and-a-changing-global-nuclear-order/. Accessed January 19, 2021.

the declarations of support for the NPT's disarmament goals made by NATO members as sincere or credible. That may include the likelihood of more of them accepting the TPNW approach.

In terms of narrative, a strong reaffirmation by the U.S. of its support for nuclear disarmament as the ultimate goal and of the defensive and limited nature of maintaining nuclear deterrence would be a useful correction to the current imbalance. This may be followed by a new review of nuclear doctrine and the current modernization plans, and subsequent decisions adjusting the posture and scaling down some or abandoning development of some new capabilities. In terms of the international agenda, beyond the laudable and potentially productive efforts on reducing nuclear risks, the rebalancing would have to include a return to the policy of seeking realistic nuclear arms reductions with Russia, beyond the New START extension. That could potentially create a bridge towards trilateral or multilateral arms control.

A Role for the European NATO Members

To restore the balancing act, it may also be helpful for the United States to identify arms control initiatives that could engage some or all other NATO members, and potentially give them an increased role as cosponsors or facilitators of discussions or negotiations.[273] While historically the European NATO allies were active in shaping the Alliance's nuclear arms control agenda, e.g., its response to the deployment of new Soviet intermediate-range nuclear forces in the 1970s, in recent years such active engagement has been largely absent. Europeans have been responding to U.S. initiatives rather than determining the agenda, and they focused mostly on calling for the preservation of the status quo in nuclear arms control, first regarding the INF and then the New START Treaty.

This stance can be partly explained by the diversity of European views about the relationship between nuclear deterrence and disarmament. It ranges from the supporters of the TPNW (non-NATO Austria and Ireland) to the nuclear deterrence-oriented European nuclear weapon possessors, France and the United Kingdom. Based on their attitude towards nuclear deterrence, a 2018 study by the European Council on Foreign Affairs divided the states of the European Union into five categories: True Believers (in nuclear deterrence), Conflicted, Pragmatists, Conformists, and Neutrals (opposed to nuclear deterrence in principle). The same paper argued that, formal policy statements aside, the degree of public interest in and the political salience of the nuclear weapons issues differ significantly across European states.[274]

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273 See: Łukasz Kulesa, "The Crisis of Nuclear Arms Control and its Impact on European Security," EU Non-Proliferation and Disarmament Consortium, *Non-Proliferation and Disarmament Papers* no. 66 (January 2020). https://www.nonproliferation.eu/the-crisis-of-nuclear-arms-control-and-its-impact-on-european-security/. Accessed January 19, 2021.

274 Manuel Lafont Rapnouil, Tara Varma and Nick Witney, "Eyes tight shut: European attitudes towards nuclear deterrence," European Council on Foreign Relations, *Flash Scorecard* (December 2018). https://www.ecfr.eu/page/-/ECFR_275_NUCLEAR_WEAPONS_FLASH_SCORECARD_update.pdf. Accessed January 19, 2021.

Little has changed since 2018. Inside NATO, all its members have accepted the necessity of reviewing and strengthening NATO's deterrence posture, including nuclear deterrence, in the face of the challenge posed by Russia and other threats to the Alliance.[275] The countries situated along NATO's eastern border, most notably Poland, Romania, and the three Baltic States, have more or less openly welcomed the recent return of prominence of nuclear deterrence in U.S. and NATO thinking. Hence, while the governments of European NATO allies are generally more likely to declare their support for nuclear disarmament and arms control than the Trump administration did, they all at minimum acknowledge, and in some cases support the necessity of nuclear deterrence.

At the same time, given their commitment to the NPT regime, the majority of U.S. allies in Europe would most likely welcome the opportunity to contribute more on the arms control and disarmament side to bolster the credibility of the balancing act. Their preference would be to work with the United States rather than taking an independent course. French President Emmanuel Macron was the only European leader to publicly float the idea of developing a European arms control agenda to be pursued with Russia, but his position has not gained any broader support so far. There now seems to be space for new joint transatlantic initiatives.

In the nuclear and nuclear-related spheres, there are a number of ideas to develop. The first one can be a joint U.S.–European initiative or a NATO initiative aimed at reaching an arms control agreement focused on restraining or prohibiting certain categories of short- and intermediate-range land-based missiles. Taking the post-INF environment as the point of departure, one variation of such an initiative could aim at zero deployments: mutual pledges not to develop and deploy and (in the case of Russia) to reverse the deployments of nuclear-capable land-based INF-range ballistic and cruise missiles in Europe. Another variant of the potential proposal could involve agreeing on global or regional ceilings for the deployment of such missiles. Russia would be the primary target for such a proposal. Its launch and promotion as a joint U.S.–European proposal rather than just a U.S. proposal could make it harder for Moscow to disregard it.

Another area for closer cooperation may be the joint development of a U.S.–European proposal linked to the U.S.–Russian negotiations of a follow-up arms control agreement to New START. Such negotiations would most likely touch upon a number of issues relevant for the European security agenda. These would include, for example, the potential reductions or withdrawal of U.S. and Russian nonstrategic nuclear weapons, the future of U.S. missile defense capabilities deployed in Europe, or the question of potential engagement of the U.K. and France in the next rounds of strategic nuclear weapons reductions. European allies could work with the United States towards developing common positions that would increase the chances of reaching an agreement on a legally binding treaty with Russia—which would most likely involve agreeing to some changes in NATO's nuclear and missile defense posture. This would also be a mechanism to convey the expectations of European allies regarding

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275 See the contribution of Michael Rühle in this volume.

the Russian commitments, for example, regarding a decrease in numbers and more transparency for the Russian nonstrategic nuclear weapons stockpile. Taken together with U.S. actions, such joint initiatives could lead to the revival and strengthening of the credibility of the deterrence–disarmament balancing act.

Rethinking the Impact of Emerging Technologies on Strategic Stability

Andrea Gilli and Mauro Gilli[276]

Introduction

According to many observers, the technological transformation we are currently experiencing, which is centered around artificial intelligence (AI), machine learning (ML), and big data (BD) as well as other emerging technologies, will possibly "be unlike anything humankind has experienced before."[277] From an economic perspective, the effects of this transformation seem to be positive, given the net gains in terms of productivity and wealth creation.[278] When we look at the potential social and political implications of this technological transformation, there seems to be more concern than optimism: According to some scholars, these new technologies might have detrimental effects on unemployment and pave the way for stricter societal control and more widespread political disinformation.[279]

When it comes to the effects that artificial intelligence, machine learning, and big data might have for international security, however, the existing policy and scholarly understanding is generally pessimistic, especially with respect to their implications for nuclear deterrence. Many scholars worry, in fact, that these new technologies will undermine strategic stability.[280] On the one hand, some fear that because of its inherent inaccuracy, machine learning may misdiagnose signals and thus mistakenly identify noise in the data as an incoming nuclear attack.[281] Additionally, due to heightened machine speed, a human in the loop might not be able or have enough time to correct for this erroneous assessment. As a result, the argument goes, algorithms left to themselves might quickly—and also inadvertently—escalate an

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277 Klaus Schwab, "The Fourth Industrial Revolution: What It Means and How to Respond," *Foreign Affairs* (December 2015). Artificial intelligence is the set of technologies that permits machines to conduct human-like tasks. Machine learning is one of these technologies and consists of algorithms. Big data refer to the growing pool of digital information available in several formats, from audio to video, from text to geolocation.

278 McKinsey Global Institute, *Artificial Intelligence: The Next Digital Frontier?* (New York, NY: McKinsey & Co., 2007).

279 Martin Ford, *Rise of the Robots: Technology and the Threat of a Jobless Future* (New York, NY: Basic Books, 2015); Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York, NY: Public Affairs, 2018); and P.W. Singer and Emerson T. Brooking, *LikeWar: The Weaponization of Social Media* (New York, NY: Houghton Mifflin Harcourt, 2018).

280 James S. Johnson, "Delegating Strategic Decision-Making to Machines: Dr. Strangelove Redux?," *Journal of Strategic Studies* (April 30, 2020). https://www.tandfonline.com/doi/full/10.1080/01402390.2020.1759038. Accessed January 19, 2021. For an opposite view, see Andrea Gilli, *Preparing for NATO-Mation: The Atlantic Alliance toward the Age of Artificial Intelligence*, NATO Defense College Policy Brief (2019). https://www.ndc.nato.int/news/news.php?icode=1270. Accessed January 19, 2021.

281 Kenneth Payne, "Artificial Intelligence: A Revolution in Strategic Affairs?," *Survival* 60, no. 5 (2018), p7–32.

incident into a crisis. On the other hand, some worry that the capabilities of these new emerging technologies may undermine the survivability of second-strike nuclear capabilities, thus eroding the foundation of mutual assured destruction, and further providing an incentive for escalation.[282]

In this article, we first argue that existing worries about the implications of emerging technologies for nuclear stability are largely exaggerated. Artificial intelligence is not making second-strike capabilities vulnerable all of a sudden; such vulnerabilities have been growing for the past decades because of improvements in counterforce—technologies and weapon systems intended to destroy, or neutralize, enemies' nuclear capabilities. Artificial intelligence is, at best, accelerating this transition.[283] By the same token, when we look at how nuclear powers have reacted in the past decades to the increasing vulnerability of their second-strike capabilities, we do not observe what the literature on emerging technologies predicts. The growing vulnerability of Soviet (later Russian) and Chinese nuclear arsenals resulting from the increasing acuity and munition accuracy of U.S. weapon system sensors has not led such countries to automate their nuclear second-strike capabilities.

Second, we investigate how artificial intelligence and advances in counterforce will affect the evolution of second-strike capabilities and, by extension, nuclear force postures. We identify three main trends. Weaker countries will have the highest incentives but will also face the highest obstacles to automate their nuclear forces. Fixed intercontinental ballistic missile (ICBMs) launchers might become increasingly vulnerable in the years ahead, to the point of losing some of their main military advantages. Countries might then have an incentive to rely on mobile ICBM platforms and on the underwater pillar of their nuclear posture—despite the U.S. superiority in anti-submarine warfare. Finally, the future of mobile ICBM launchers will depend on the competition between advances in air-defense systems and in deep-strike capabilities. Artificial intelligence will affect both domains but it is too early to assess how the offense–defense balance will shift. While the integration of artificial intelligence with air-defense systems promises to increase the survivability of mobile ICBMs from enemy attacks, progress in deep strike—such as in a new generation of stealth—will have the opposite effect.[284]

Third, we discuss how increasing automation will enhance the role of human beings at different levels of policy. Technological trends will entail choices about nuclear

282 Vincent Boulanin (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume I: Euro-Atlantic Perspectives* (Stockholm: SIPRI, 2019); Lora Saalman (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume II: East Asian Perspectives* (Stockholm: SIPRI, 2019); Petr Topychkanov (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume III: South Asian Perspectives* (Stockholm: SIPRI, 2020).

283 Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies* 38, no. 1–2 (2015), p38–73; Keir A. Lieber and Daryl G. Press, "The New Era in Counterforce: Technological Change and the Future of Nuclear Deterrence," *International Security* 41, no. 4 (2017), p9–49.

284 Keir A. Lieber and Daryl G. Press, "The New Era in Counterforce," *International Security* 41, no. 4 (Spring 2017), p9–49; Stephen Biddle and Ivan Oelrich, "Future Warfare in the Western Pacific: Chinese Anti access/Area Denial, U.S. AirSea Battle, and Command of the Commons in East Asia," *International Security* 41, no. 1 (Summer 2016), p7–48.

posture, which, in turn, belong to the realm of strategy. Machines can help predict short- to medium-term trends, but strategic nuclear forces take decades to develop. Policymakers will then have to identity and implement strategies that can prove effective despite significant geopolitical and technological changes. Similarly, as more and more functions are automated, psychological dynamics—including various types of bias—will have deeper impacts, as human beings assume more relevant roles and take more critical decisions. This discussion warrants further attention to the personnel domain, from recruitment to training and from education to leadership. After highlighting some key differences between the perception about the risks associated with artificial intelligence between the two sides of the Atlantic, conclusions follow.

Emerging Technologies and Strategic Stability

According to many scholars, practitioners, and policymakers, the emergence of artificial intelligence, machine learning, and big data represents a military revolution akin to gunpower and nuclear weapons.[285] According to others, this technological revolution could promote strategic instability and increase the risks of escalation—especially if these new technologies were to be integrated into the nuclear domain.

Concerns about artificial intelligence and strategic stability date back to the end of the Cold War.[286] Recent progress in machine learning and deep-neural networks have given these concerns new salience. For instance, James Johnson notes that, because of artificial intelligence, strategic "competition between great powers…will likely become a negative-sum enterprise."[287] Scholars, analysts, and practitioners generally highlight three main risks. First, artificial intelligence-enhanced "intelligence, surveillance and reconnaissance (ISR) capabilities…could undermine" nuclear stability.[288] Others go even further and argue that artificial intelligence might "make future nuclear war winnable."[289] Second, as Anja Kaspersen and Chris King note, the "addition of autonomy, for example, to nuclear delivery vehicles…could make them more vulnerable, which would undermine their predictability, increase the prospects for miscalculation and decrease stability."[290] Third, some underline the inherent risks of arms races that these new technologies might trigger. Satanan Kulshrestha, for instance, argues that swarm warfare is a "low-budget, scalable approach" that will be widely accessible and hence "could be devastating and damaging as a nuclear

285 Kenneth Payne, "Artificial Intelligence: A Revolution in Strategic Affairs?," *Survival* 60, no. 5 (2018), p7–32.

286 Allan M. Din (Ed.), *Arms and Artificial Intelligence: Weapons and Arms Control Applications of Advanced Computing* (Stockholm: SIPRI, 1987).

287 James S. Johnson, "Delegating Strategic Decision-Making to Machines," p28.

288 Anja Kaspersen and Chris King, "Mitigating the challenges of nuclear risk while ensuring the benefits of technology," in: Vincent Boulanin (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume I* (Stockholm: SIPRI, 2019), p119–127.

289 James S. Johnson, "Delegating Strategic Decision-Making to Machines," p4.

290 Anja Kaspersen and Chris King, "Mitigating the challenges of nuclear risk while ensuring the benefits of technology."

weapon onslaught."[291] Thus, as Edward Geist and Andrew Lohn note, artificial intelligence "might portend new capabilities that could spur arms races or increase the likelihood of states escalating to nuclear use."[292]

While it is important to take these concerns into serious consideration, in the following sections we argue that the increasing vulnerability of second-strike capabilities is not novel and is not driven by advances in artificial intelligence. It has been in the making for many decades because of several technological trends preceding artificial intelligence and machine learning. Moreover, by examining how countries have responded to the growing vulnerability of their second-strike capabilities, we do not observe the trends predicted by the literature on emerging technologies and nuclear deterrence, namely increasing automation of their nuclear forces.

The New Era of Counterforce

Concerns about the effects of emerging technologies for nuclear deterrence rest on the premise that second-strike capabilities are currently secure, and that artificial intelligence is going to make them vulnerable all of a sudden.[293] However, the vulnerability of nuclear arsenals has been growing for over 30 years—albeit unevenly across countries—because of several technological developments, not just because of artificial intelligence.[294]

Today's nuclear weapons can be delivered through three main systems: ground-based launchers for both cruise missiles and ICBMs; submarine-launched cruise (SLCMs) and ballistic missiles (SLBMs); and finally, air-delivered cruise missiles or gravity bombs dropped by fighters or bombers.[295] Nuclear deterrence, to be effective, needs to rely on credible second-strike capabilities. To be credible, second-strike capabilities need to be able to retaliate after a nuclear attack.[296] For this to work, second-strike capabilities need to be able to survive a nuclear attack. Nuclear powers have pursued two main approaches to ensure the survivability of their nuclear arsenal: hardening and concealment.[297]

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291 Sanatan Kulshrestha, "The Indian perspective on the massive damage potential of advanced military technologies," in: Petr Topychkanov (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume III: South Asian Perspectives* (Stockholm: SIPRI, 2020), p32.

292 Edward Geist and Andrew J. Lohn, *How Might Artificial Intelligence Affect the Risk of Nuclear War* (Santa Monica, CA: RAND Corporation, 2018), p1.

293 Anja Kaspersen and Chris King, "Mitigating the challenges of nuclear risk while ensuring the benefits of technology."

294 Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," p38–73; Keir A. Lieber and Daryl G. Press, "The New Era in Counterforce."

295 Owen Coté, "The Trident and the Triad: Collecting the D-5 Dividend," *International Security* 16, no. 2 (Fall, 1991), p117–145.

296 Kenneth N. Watz, "The Spread of Nuclear Weapons: More May Be Better," *Adelphi Papers* 21, no. 171, International Institute for Strategic Studies (1981).

297 A third strategy concerns redundancy. See Scott D. Sagan, *Moving Targets: Nuclear Strategy and National Security* (Princeton, NJ: Princeton University Press, 1990).

Hardening entails the deployment of nuclear forces in structures that can withstand the effects of nuclear detonations such as blast, heat, ground shock, and others. These measures include reinforced silos for ballistic missiles; hardened shelters for bombers; protective sites for patrolling mobile missile launchers; and underground bunkers for command and control centers. Concealment entails minimizing the risk of detection and tracking of mobile delivery systems, such as ballistic missile submarines (SSBNs) and mobile missile launchers (transporter erector launchers, or TELs), which move over vast areas.[298]

As Daryl Press and Kier Lieber argue, however, advances in accuracy and in remote sensing have undermined both hardening and concealment, thus progressively weakening the tenets of mutual assured destruction. Increased accuracy has significantly reduced the benefits of hardening, particularly for rivals of the United States. Improvements in navigation and guidance have increased the capacity of delivery systems—ballistic missiles, bombers, or ballistic-missile submarines—to determine and constantly update their precise position. This trend is particularly evident for ballistic-missile submarines; because of the accuracy revolution, from instruments for countervalue (targeting enemy's populated centers), they have become instruments of counterforce (targeting enemy's nuclear arsenals).[299] Moreover, other improvements, such as in electronics, have further enhanced the chances of successful counterforce. For instance, so-called "compensating" fuses permit compensation for errors in the path of a nuclear warhead by setting off the detonation earlier or later than initially intended, while retargeting capabilities permit compensation for missile unreliability.[300]

Improvements in remote sensing have also significantly reduced the benefits of concealment. On the one hand, in comparison to the past, a broader range of military platforms, from unmanned aerial vehicles to satellites, carry a more diverse range of advanced sensors that, together, significantly enhance the chance of detecting and tracking enemy mobile delivery systems. On the other hand, advances in communications and in computing permit persistent surveillance, real-time transmission, and elaboration of large amount of data, which further increase the chances of detection and of tracking.[301]

In sum, artificial intelligence is not by itself weakening strategic stability; second-strike capabilities—the pillars of nuclear deterrence—have been undermined by technological changes that long preceded advances in artificial intelligence.[302] In

298 Keir A. Lieber and Daryl G. Press, "Technological Change and the Future of Nuclear Deterrence," *International Security* 41, no. 4 (Spring 2017), p9–49.

299 Norman Friedman, *Seapower and Space: From the Dawn of the Missile Age to Net-centric Warfare* (Annapolis, MD: Naval Institute Press, 2000).

300 Keir A. Lieber and Daryl G. Press, "The New Era in Counterforce."

301 Ibid.

302 Keir A. Lieber and Daryl G. Press, "The End of MAD? The Nuclear Dimension of U.S. Primacy," *International Security* 30, no. 4 (Spring 2006), p7–44.

the next sections, we first look at the consequences of increasing vulnerability of countries' second-strike capabilities and next, at how progress in counterforce as well as further advances in artificial intelligence may shape their nuclear arsenals as well as posture, doctrine, and strategy.[303]

Increasing Vulnerability, Increasing Automation?

When we look at how countries have reacted over the past decades to the growing vulnerability of their second-strike capabilities, we do not observe the trends that the literature predicts on emerging technologies and nuclear instability. Countries have not, in fact, relied on increasing automation to compensate for the vulnerability of their retaliatory forces.

The case of the Soviet Union towards the end of the Cold War is telling. Facing growing U.S. nuclear counterforce capabilities, the Soviet Union pursued multiple avenues to limit its strategic vulnerability. On the one hand, Moscow also pursued arms control and disarmament to address their relative weakness. On the other, Moscow developed Perimeter, a partially automated retaliation system, and considered the development of Dead Hand, a fully automated retaliation system.[304] Dead Hand represents the very type of retaliatory capability that the literature on emerging technologies is concerned about, as it "would turn over the fate of mankind to computers."[305] In fact, several scholars point to it as an early example of the risks we are currently running. However, such a concept was too much even for the Soviets who eventually abandoned it. The Soviet military opposed the idea of removing "one last human firewall" before a retaliation decision was taken.[306] In the words of a former colonel who participated in the development of more advanced Soviet second-strike capabilities in the 1980s, "It was complete madness."[307]

The retaliatory system that the Soviet Union ultimately developed instead was Perimeter, a "modified 'Dead Hand.'"[308] Perimeter was intended to ensure a Soviet retaliatory strike in case of an American nuclear attack. However, it did so by doing the very opposite of what the literature on emerging technology worries about: In case of an incoming decapitating first strike, it delegated the decision to retaliate to other officers instead of to a computer, and it delayed the decision to retaliate, rather than accelerating it. One of Perimeter's central features was, in fact, to avoid the risk of an accidental nuclear escalation; the logic of Perimeter was to delay the

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303 Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy."

304 David E. Hoffman, *The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy* (Anchor Books, 2010), p46–47, 276–284; and Nicholas Thompson, "Inside the Apocalyptic Soviet Doomsday Machine," *Wired* (September 21, 2009).

305 David E. Hoffman, *The Dead Hand*, p279.

306 Ibid., p280.

307 Ibid., p281.

308 Ibid., p338. Perimeter is now known also as Dead Hand.

decision to retaliate by taking "the immense burden of a sudden, shoot-or-die decision off the shoulders of the Soviet leader, especially someone as feeble as Brezhnev or Chernenko."[309] Fearing an incoming decapitating strike, a Soviet leader was given the option of activating Perimeter, which automatically transferred the decision to retaliate to "a few duty officers who might still be alive in a concrete bunker."[310] These duty officers had to check if a set of conditions had been met, and in that case, they would decide whether to send the order to all Soviet nuclear forces to retaliate.[311]

The case of China further questions the argument that the growing vulnerability of nuclear arsenals will inevitably lead to their full automation. Some, for instance, are worried that a U.S.-launched swarm of stealth drones could trigger a prompt Chinese nuclear response.[312] The history of China's nuclear posture, however, questions these worries as well as the thesis connecting emerging technologies to the risk of nuclear escalation. First of all, China's nuclear capabilities have been vulnerable to a U.S. first strike for some time.[313] The Chinese leadership is trying to close this gap but has not responded to its arsenal's vulnerability as the literature on emerging technologies and nuclear stability would predict. On the one hand, Chinese land-based nuclear forces remain at low-alert status,[314] while its nuclear submarines have long left ports without

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309 Ibid., p279.

310 Ibid., p279.

311 This development is remarkable because it highlights a broader issue about pre-delegation, i.e., granting lower-level commanders the authority to use nuclear weapons under carefully prescribed conditions. Pre-delegation would clarify a hierarchy among different stakeholders, should a decapitation attack occur. According to existing sources, the Soviet leadership had been generally hesitant to spell out such hierarchy, mostly for domestic political considerations, i.e., the stability of the regime. During the entire Cold War, the command and control of Soviet strategic nuclear submarines remained highly centralized even when U.S. weapons accuracy increased. As a result, the Soviet Union weakened the command and control of their strategic nuclear forces because of the lack of internal trust. In other words, consistent with the literature on military innovation, politics, not just technology, explain Soviet nuclear posture. See Brendan Rittenhouse Green and Austin Long, "The MAD Who Wasn't There: Soviet Reactions to the Late Cold War Nuclear Balance," *Security Studies* 26, no. 4 (2017), p606–41; Norman Friedman, *The US Maritime Strategy* (Annapolis, MD: Naval Institute Press, 1988); Matthew Evangelista, *Innovation and the Arms Race: How the United States and the Soviet Union Develop New Military Technologies* (Ithaca, NY: Cornell University Press, 1988). It is important to highlight, nonetheless, that the issue is complex: pre-delegation serves survival goals with the intended consequence of strengthening deterrence and the potentially unintended result of fostering inadvertent escalation and nuclear risks. See Dmitry (Dima) Adamsky, "Nuclear Incoherence: Deterrence Theory and Non-Strategic Nuclear Weapons in Russia," *Journal of Strategic Studies* 37, no. 1 (2014), p91–134. The origins of pre-delegation, in Russia, stem back to the Cold War Soviet policy of keeping dispersed and vast nuclear forces in launch-ready configuration. However, in the late 1950s, NATO also pre-delegated—although never to the lowest level—launch authority for at least some of its nuclear weapons. See, for instance, Scott D. Sagan, *Moving Targets*, p142–143; or Bruce G. Blair, *The Logic of Accidental Nuclear War* (Washington, DC: Brookings Institution Press, 1993), p46–52.

312 Jürgen Altmann and Frank Sauer, "Autonomous Weapon Systems and Strategic Stability," *Survival* 59, no. 5 (2017), p117-142.

313 Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and U.S.-China Strategic Stability," *International Security* 40, no. 2 (Fall 2015), p7–50.

314 Wu Riqiang, "Living with Uncertainty: Modeling China's Nuclear Survivability," *International Security* 44, no. 4 (Spring 2020), p84–118.

nuclear weapons on board.[315] On the other hand, China has not rushed to automate its nuclear force structure.[316]

Additionally, the country has maintained a no-first-use policy and a minimum deterrence posture: It has not pursued a mutually assured destruction policy.[317] The sources of China's nuclear restraint are several and not fully understood.[318] China's nuclear modernization has, among others, also aimed to reduce its vulnerability to U.S. counterforce capabilities. Interestingly, artificial intelligence does not seem to play a central role in this process, at least until now.

Counterforce, Artificial Intelligence, and Nuclear Posture

Emerging technologies coupled with trends related to counterforces are nonetheless likely to affect countries' nuclear postures and arsenals. In this section, we identify three potential trends.

Weak States and Weak AI

As Michael Horowitz notes, incentives to automate early warning and command and control of nuclear forces are not symmetrical. Countries most vulnerable and with smaller nuclear arsenals have the highest incentives to automate their nuclear capabilities in order to obviate the risk of a disarming first strike.[319] These countries, however, are also more likely to face significant obstacles in this endeavor, because they might lack the scientific, technological, and industrial base necessary to exploit artificial intelligence in full.[320] Developing, integrating, and employing advanced self-learning algorithms is a massive challenge, both in civilian and military domains.[321] Writing algorithms is difficult, as shown by the very concentrated market structure of the artificial intelligence business as well as by the pay scale of machine learning

315 Lyle Goldstein and William Murray, "Undersea Dragons: China's Maturing Submarine Force," *International Security* 28, no. 4 (Spring 2004), p161–196; Wu Riqiang, "Survivability of China's Sea-Based Nuclear Forces," *Science & Global Security* 19, no. 2 (2011), p91–120.

316 Wu Riqiang, "Living with Uncertainty: Modeling China's Nuclear Survivability."

317 Fiona S. Cunningham and M. Taylor Fravel, "Dangerous Confidence? Chinese Views on Nuclear Escalation," *International Security* 44, no. 2 (Fall 2019), p61–109.

318 M. Taylor Fravel, "Shifts in Warfare and Party Unity: Explaining China's Changes in Military Strategy Authors," *International Security* 42, no. 3 (Winter 2017/18), p37–83.

319 Michael C. Horowitz, "Artificial intelligence and nuclear stability," in: Vincent Boulanin (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk* (Stockholm: SIPRI, 2019), p79–83.

320 Andrea Gilli and Mauro Gilli, "Military Power in The Second Machine Age," Paper Presented at the American Political Science Association Annual Conference, Washington DC (2018); and Andrea Gilli and Mauro Gilli, "Why China Has Not Caught Up Yet: Military-Technological Superiority and the Limits of Imitation, Reverse Engineering, and Cyber Espionage," *International Security* 43, no. 3 (Winter 2018/2019), p141–189.

321 Marco Iansiti and Karim R. Lakhani, *Competing in the Age of AI: Strategy and Leadership When Algorithms and Networks Run the World* (Cambridge, MA: Harvard Business School Press, 2020).

experts, which reflects the scarcity of these skills.[322] The technological knowledge required to operate in this field poses very high entry barriers, which in turn limits the number of AI leaders.[323] Moreover, integrating and employing advanced algorithms poses further challenges; suffice it to say that many consulting companies offer expensive services to private and public organizations to accomplish this very transition.[324]

In addition, machine learning also requires very advanced semiconductors. This means that in order to automate its nuclear forces, a country will need to either have access to the market of the most advanced semiconductors or to be able to produce them by itself. However, the most advanced semiconductors are extremely difficult to produce, and there are only a handful of producers from the U.S. or from U.S. allies.[325] Similarly, the machinery necessary to produce semiconductors are very difficult to develop and hard to employ, as they require specialized workers with extensive experience.[326] Last, but not least, algorithms require data.[327] While in theory, access to commercial, generalized data can be relatively easy, data for training algorithms on military issues are much more difficult to access and generate.[328] Weak countries are at a particular disadvantage in this regard. Consider an artificial intelligence-centered early-warning system: In order to work, this requires data for training its underlying algorithms. Without such data, it cannot work. Synthetic data from a small country are necessarily highly imprecise as the data cannot reflect the complexity of the natural and operational environment, with the result of undermining the very effectiveness of the system.[329] In sum, while integrating artificial intelligence into one's nuclear forces

322 Daniel Castro, Michael McLaughlin, and Eline Chivot, *Who Is Winning the AI Race: China, the EU or the United States?* (Washington, DC: Center for Data Innovation, 2019).

323 Avi Goldfarb and Daniel Trefler, "Artificial Intelligence and International Trade," in: Ajay Agrawal, Joshua Gans, and Avi Goldfarb (Eds.), *The Economics of Artificial Intelligence: An Agenda* (Chicago, IL: University of Chicago Press, 2019), p463–92; and Hal Varian, "Artificial Intelligence, Economics, and Industrial Organization," in: Ajay Agrawal, Joshua Gans, and Avi Goldfarb (Eds.), *The Economics of Artificial Intelligence: An Agenda* (Chicago, IL: University of Chicago Press, 2019), p399–419.

324 Paul R. Daugherty and H. James Wilson, *Human + Machine: Reimagining Work in the Age of AI* (Cambridge, MA: Harvard Business School Press, 2018).

325 James Andrew Lewis, *Learning the Superior Techniques of the Barbarians: China's Pursuit of Semiconductor Independence* (Washington, DC: Center for Strategic and International Studies, 2019).

326 Saif M. Khan, "Maintaining the AI Chip Competitive Advantage of the United States and its Allies," CSET Issue Brief, Center for Security and Emerging Technologies (December 2019); Neil Thompson and Svenja Spanuth, "The Decline of Computers As a General Purpose Technology: Why Deep Learning and the End of Moore's Law are Fragmenting Computing" (November 20, 2018). https://ssrn.com/abstract=3287769. Accessed January 19, 2021; Saif M. Khan and Alexander Mann, *AI Chips: What They Are and Why They Matter: An AI Chip Reference*, Center for Security and Emerging Technologies (April 2020). https://cset.georgetown.edu/research/ai-chips-what-they-are-and-why-they-matter/. Accessed January 19, 2021.

327 Matt Taddy, "The Technological Elements of Artificial Intelligence," in: Ajay Agrawal, Joshua Gans, and Avi Goldfarb (Eds.), *The Economics of Artificial Intelligence: An Agenda* (Chicago, IL: University of Chicago Press, 2019), p61–87.

328 Andrea Gilli and Mauro Gilli, "Military Power in The Second Machine Age."

329 This is how electronic warfare and anti-submarine warfare have been conducted during the 20th century. See for instance Alfred Price, *War in The Fourth Dimension* (London: Greenhill Books, 2001); and John Lehman, *Oceans Ventured: Winning the Cold War at Sea* (New York, NY: W. W. Norton & Co., 2018).

may represent a rational solution to offset their vulnerabilities, many countries may simply lack the capabilities to make this transition effective.

Fixed ICBMs

Over the past decades, improvements in accuracy and in remote sensing have made fixed ICBMs increasingly vulnerable. The integration of emerging technologies with counterforce capabilities will likely further strengthen these trends and make concealing of fixed ICBM sites increasingly difficult. First, the miniaturization of sensors has been lowering launch and production costs of satellites, permitting a multitude of countries to launch observation satellites.[330] Second, commercial companies have been entering the space business and have started providing off-the-shelf surveillance capabilities, such as those widely used for open-source intelligence.[331] Finally, machine learning algorithms coupled with existing sensors, including hyperspectral imaging, further increase the accuracy of space-based intelligence, which can then provide abundant and precise information about even hidden land-based targets.[332]

As a result of these trends, concealing fixed ICBMs will become increasingly more difficult and costly. The construction of launch silos for ICBMs takes several years, and requires a large amount of personnel, the employment of heavy equipment, and extensive provision of supplies (materials and instruments). Concealing the whole construction process from space-based sensors from beginning to end requires a lot of effort and attention since minor mistakes in the planning process or in the concealment itself might compromise the whole effort. Moreover, persistent monitoring coupled with the capabilities of machine learning—which can more accurately identify even minor variations in landscape over possibly infinite numbers of pictures—can help uncover ICBM locations, thus undermining their survivability. Countries can offset this development by increasing the number of silos (i.e., redundancy). However, this comes at great cost and unless a very large number of silos are built, it does not address the problem. For countries with limited resources and for those facing the United States' counterforce, the utility of investing in fixed ICBMs might shrink significantly given their inherently growing vulnerability. These countries might decide to progressively remove this type of capability from their strategic arsenal.

Mobile ICBMs

Advances in counterforce capabilities have also eroded the survivability of mobile ICBMs. However, predicting whether this trend will continue or whether it will be reversed

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330 *Thriving on Our Changing Planet A Decadal Strategy for Earth Observation from Space* (Washington, DC: The National Academies of Science, Engineering and Medicine, 2018).

331 Linda Dawson, *The Politics and Perils of Space Exploration Who Will Compete, Who Will Dominate?* (Cham: Springer, 2017).

332 Wu Riqiang, "Living with Uncertainty: Modeling China's Nuclear Survivability."

is difficult to say at this stage. The future survivability of mobile ICBMs will depend on the competition between anti-air-defense systems and counterforce capabilities (such as deep strike), and on which side will benefit the most from application of artificial intelligence. For mobile ICBMs, the biggest threat comes from the multiplicity of platforms that can detect, track, and neutralize them, including satellite-based synthetic-aperture radars, airborne signal intelligence systems, and air-launched gravity bombs or laser-guided munitions.[333] While part of the "kill-chain" can be performed by platforms that are relatively safe from enemy air defense systems such as satellites, other functions are performed by systems that need to penetrate a country's air space. This means that such systems will be within range of the enemy's integrated air defense systems, whether less sophisticated ones (low-altitude and short-range anti-air artillery or infrared-guided man-portable air defense systems) or more advanced ones (high-altitude, long-range surface-to-air missiles, or interceptors).[334]

Progress in artificial intelligence, machine learning, and other realms promises to significantly enhance air-defense capabilities. It could potentially allow for coordination of multi-sensor and multi-receiver integrated radar systems, and hence significantly degrade the main benefit of stealth—i.e., limited frontal radar reflections.[335] In addition, more advanced software simulations can facilitate the detection of incoming aircraft by feeding potential signature returns into signal processing software—rather than having them scan the horizon for a much broader range of signals.[336] Finally, the pursuit of more efficient semiconductors, such as gallium nitride, will enhance the power of existing radars, and hence their range and accuracy.[337]

Submarine-launched Ballistic Missiles

The increasing vulnerability of fixed ICBMs might provide some countries with the incentive to pursue not only mobile ICBMs but also submarine-launched ballistic missiles (SLBMs). Developing and operating SLBMs, however, will pose significant challenges. First, for countries that do not already possess a submarine-industrial base and a submarine force, entering this realm will be extremely demanding and time consuming, given the massive entry barriers of the submarine business, the extensive training that submariners need to go through in order to acquire proficiency, and the infrastructural support that submarine operation requires, such as specific

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333 Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy."

334 Rebecca Grant, *The Radar Game: Understanding Stealth and Aircraft Survivability* (Arlington, VA: The Mitchell Institute for Aerospace Studies, 2006).

335 Andrea Gilli and Mauro Gilli, "Technological Change and International Stability: The Evolution of Air Defense Systems," Working Paper.

336 Ibid.

337 Paul Blount, Steven Huettner and Ben Cannon, "A High Efficiency, Ka-Band Pulsed Gallium Nitride Power Amplifier for Radar Applications," Conference: 2016 IEEE Compound Semiconductor Integrated Circuit Symposium, (October 23–26, 2016).

command and control centers.[338] Submarines are, in fact, extremely difficult to design, develop, and produce, with some people comparing them to space shuttles because of the industrial and engineering challenges they pose.[339] Similarly, the operation of submarines is equally demanding: The ocean is an unfriendly environment, and minor mistakes are sufficient to lead to catastrophic outcomes.[340] Consider that the Indian Navy's multibillion-dollar Arihant submarine was out of commission for about a year after a crewmember failed to close an external hatch before it dived.[341]

Second, no technological trend will reverse the challenges of developing and operating submarines anytime soon. Computer assistance with design and development has been in use for at least two decades, but it has not yet lowered the entry barriers in submarine production—in fact, it has required more training for construction workers.[342] Similarly, automating submarines will not obviate the need for highly trained personnel; it will only create additional technical problems and risks. For autonomous submarine systems to be effective, they need to be capable of contextual decision-making.[343] However, the ocean is a dynamically complex environment, and many of its features (such as underwater currents) are still not fully understood.[344] Last but not least, although some believe that autonomous underwater systems will democratize submarine capabilities, automating an underwater nuclear deterrent entails huge risks—including that the vessel is lured into enemy hands or its weapon systems are activated by adversarial forces, in addition to the possibility of accident.[345]

Third, even if a country can successfully enter the submarine business and quickly master how to operate a sea-based deterrent, hiding underwater will still represent a massive hurdle, especially in light of advanced U.S. anti-submarine

338 John F. Schank, Jessie Riposo, John Birkler and James Chiesa, *The United Kingdom's Nuclear Submarine Industrial Base, Volume 1: Sustaining Design and Production Resources* (Santa Monica, CA: RAND Corporation, 2005); John F. Schank, Cynthia R. Cook, Robert Murphy, James Chiesa, Hans Pung, and John Birkler, *The United Kingdom's Nuclear Submarine Industrial Base, Volume 2: Defence Roles and Required Technical Resources* (Santa Monica, CA: RAND Corporation, 2005); Raj Raman, Robert Murphy, Laurence Smallman, John F. Schank, John Birkler, and James Chiesa, *The United Kingdom's Nuclear Submarine Industrial Base, Volume 3: Options for Initial Fuelling* (Santa Monica, CA: RAND Corporation, 2005).

339 Hamish McDonald and Deborah Snow, "Submarines No Longer All At Sea," *Sydney Morning Herald* (July 9, 2012).

340 David Miller and John Jordan, *Modern Submarine Warfare* (London: Salamander Books, 1987), p46–47.

341 Dinakar Peri and Josy Joseph, "INS Arihant left crippled after 'accident' 10 months ago," *The Hindu* (January 8, 2018).

342 James Jinks and Peter Hennessy, *The Silent Deep: The Royal Navy Submarine Service Since 1945* (London, UK: Allen Lane, 2015), p617.

343 Defense Science Board, "Task Force Report: The Role of Autonomy in DoD Systems," Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (2012), p28; Anthony Finn and Steve Scheding, *Development and Challenges for Autonomous Unmanned Vehicles: A Compendium* (Berlin: Springer-Verlag, 2010), p49–54.

344 David Miller and John Jordan, *Modern Submarine Warfare*, p46–47.

345 Bryan Clark and Timothy A. Walton, "Taking Back the Seas: Transforming the U.S. Surface Fleet for Decision-Centric Warfare," Center for Strategic and Budgetary Assessment (2019).

warfare capabilities.[346] Tellingly, even the submarines of China and some of Russia are considered noisy, and hence relatively easy to detect.[347] Yet comparatively, it will still be easier to hide a submarine than to hide fixed ICBMs; while the oceans are not transparent, they offer multiple options for hiding, such as in shallow coastal waters, where sound propagation is significantly limited.[348]

More Autonomation, More Important Human Beings

Artificial intelligence is an instance of technological change.[349] Technological change, from an economic perspective, is a process that makes a product or an activity cheaper, better, or more efficient, thus driving its consumption.[350] When a good or service becomes cheaper, we consume less of its substitutes, and more of its complements. For instance, railroads reduced the costs of train transportation, and as a result, naval traffic shrank. Similarly, progress in jet engines made air travel more efficient (cheaper and quicker, as well as safer) vis-à-vis other substitutes, such as train, car, or ship.[351] However, when more trains or airplanes are used, there is also an uptick in demand for their complementary goods and services: railroads, airports, and all related activities to these types of transportation.[352] The same logic applies to artificial intelligence. Artificial intelligence, through machine learning, is a prediction technology. When the cost of prediction shrinks, we use more of it. However, this increasing consumption calls for more complements, which are primarily judgment calls and subjective assessments: We need to better assess the value and logic of prediction.[353] As Frank Sauer notes, human judgement "includes the ability to evaluate and combine numerous contextual sources of information."[354] Sauer refers to Lt. Col. Stanislav Petrov's famous 1983 questioning of Soviet early-warning systems alerting of a nuclear attack. The same logic applies to more recent developments: As intelligence, surveillance, and reconnaissance (ISR) and early-warning systems are

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346 See for example Owen R. Coté Jr., *The Third Battle: Innovation in the U.S. Navy's Silent Cold War Struggle with Soviet Submarines* (Newport, R.I.: Naval War College, 2009).

347 Owen R. Coté Jr., *Assessing the Undersea Balance between the United States and China,* in: Thomas G. Mahnken (Ed.), *Competitive Strategies for the 21st Century: Theory, History and Practice* (Stanford, CA: Stanford Security Studies, 2012), p184–205.

348 Donald C. Daniel, *Anti-Submarine Warfare and Superpower Strategic Stability* (Chicago, IL: University of Illinois Press, 1986), p28–34.

349 Ajay Agrawal, Joshua Gans and Avi Goldfarb, *Prediction machines: the simple economics of artificial intelligence* (Cambridge, MA: Harvard Business School Press, 2018).

350 This is generally referred to as the Jevons paradox.

351 Vaclav Smil, *Prime Movers of Globalization: The History and Impact of Diesel Engines and Gas Turbines* (Cambridge, MA: The MIT Press, 2013).

352 Ron Adner and Rahul Kapoor, "Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations," *Strategic Management Journal* 31, no. 3 (March 2010), p306–333.

353 Ajay Agrawal, Joshua Gans and Avi Goldfarb, *Prediction machines: the simple economics of artificial intelligence.*

354 Frank Sauer, "Military applications of artificial intelligence: Nuclear risks redux," in: Vincent Boulanin (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk* (Stockholm: SIPRI, 2019), p8490.

increasingly automated, the responsibility to the human in the loop will grow.[355] As a result, personnel recruitment as well as education and training will become more important. Self-evidently, more advanced countries, with better education systems and larger pools of competent young military forces, are more advantaged than others.[356]

Second, if automation gives more importance to human beings, more attention must be paid to cognitive and psychological dynamics. Three issues are worth attention. On the one hand, the management literature on artificial intelligence underestimates these challenges.[357] The relatively recent subfield of behavioral economics largely deals with these issues.[358] On the other hand, the literature on artificial intelligence and strategic stability probably exaggerates the reliability of human beings working under stress with information that is inherently limited, partial, or inaccurate.[359] Additionally, most work in this area assumes that, facing short reaction times, policymakers will trade quick responses for accuracy. While certainly possible, this is not necessarily a given. Will the leadership of a country agree to automate its nuclear forces with the risk that those forces will target its own territory? The literature on nuclear stability has devoted significant attention to signaling. It is possible that in the future, the discussion will shift towards nudging, as behavioral economics suggests.[360]

Third, as technology enhances the role of human beings, nuclear strategy, doctrines, and posture grow in salience since they are directly shaped by human beings. Simply put, technology sets constraints, and human beings can exploit opportunities. Identifying these opportunities will become even more important. The development of nuclear weapons led to mass retaliation first and to mutual assured destruction next, which were neither obvious nor given. The key question for the future is how countries will react and adjust their strategy, posture, and doctrine to the growing capabilities of counterforces as well as to the increasing role of artificial intelligence. Will countries stick to a no-first-use policy, for instance, or will they integrate their nuclear forces into their conventional military structure to prevent foreign attack? Will countries adopt more defensive or offensive postures?

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355 Paul Scharre and Michael C. Horowitz, "An Introduction to Autonomy in Weapon Systems," Working Paper, Center for New American Security (2015).

356 Andrea Asoni, Andrea Gilli, Mauro Gilli and Tino Sanandaji, "A mercenary army of the poor? Technological change and the demographic composition of the post-9/11 U.S. military," *Journal of Strategic Studies* (2020). https://www.tandfonline.com/doi/abs/10.1080/01402390.2019.1692660. Accessed January 19, 2021.

357 Ajay Agrawal, Joshua Gans and Avi Goldfarb, *Prediction machines: the simple economics of artificial intelligence.*

358 Daniel Kahneman, *Thinking, Fast and Slow* (New York, NY: Farrar, Strauss and Giroux, 2011).

359 Jürgen Altmann and Frank Sauer, "Autonomous Weapon Systems and Strategic Stability."

360 For a recent discussion of signaling, see Spencer D. Bakich, "Signalling capacity and crisis diplomacy: Explaining the failure of 'maximum pressure' in the 2017 U.S.-North Korea nuclear crisis," *Journal of Strategic Studies* (2020). https://www.tandfonline.com/doi/abs/10.1080/01402390.2020.1755960?journalCode=fjss20. Accessed January 19, 2021. On nudging, see Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness* (New Haven, CT: Yale University Press, 2008).

In this respect, it is worth highlighting that around the world, and also across the Atlantic, countries have different perspectives on these issues and such differences will likely play a prominent role in the future: Ethical stances, cultural understandings, and legal interpretations shape the way in which artificial intelligence is designed, intended, and employed.[361] We thus cannot rule out that a divergence could occur. Worries about emerging technologies and nuclear stability are, in fact, significantly more pronounced in Europe than in the U.S., at least if we look at the publications of the major think tanks.[362] These differences can be observed also among official documents. While the United States (and China) have published extensive strategy or policy documents on emerging technologies that, more or less indirectly, touch upon the nuclear field, European countries have been considerably more hesitant to officially discuss the military implications of artificial intelligence, with France being the exception.[363] Overall, European countries are generally more supportive of a ban, or at least a tight regulation, of autonomous systems than the United States (or China, Russia, and Israel).[364]

Whether this reflects a lack of technological capabilities or strategic culture is difficult to say, but it carries some important implications for the near future. There are in fact growing calls both to regulate the diffusion and military employment of artificial intelligence and to add emerging technologies into new arms control agreements—as current treaties are expiring or some countries have withdrawn from them. Without a common, coherent, and solid transatlantic perspective, it will be hard—if not impossible—to reach any meaningful agreement. Similarly, it will be difficult to maintain interoperability and, consequently, deterrence and defense in the years ahead if military modernization does not occur along some shared principles and ideas between the two sides of the Atlantic. Several proposals—broadly concerning artificial intelligence—have been advanced in recent years.[365] Overall, NATO and the European Union should push against the nefarious rhetoric surrounding emerging technologies and sponsor research

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361 Bipartisan Policy Center and Center for Security and Emerging Technology, *Artificial Intelligence and National Security* (June 2020); Simona R. Soare, "Digital Divide? Transatlantic defense cooperation on Artificial Intelligence," European Union Institute for Security Studies Brief 3 (March 2020).

362 An example comes from this collection of works: Vincent Boulanin (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume I*; Lora Saalman (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume II*; and Petr Topychkanov (Ed.), *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume III*.

363 Ulrike Esther Franke, "Not Smart Enough: The Poverty of European Military Thinking on Artificial Intelligence," European Council on Foreign Relations Policy Brief (December 2019); Christie Lawrence and Sean Cordey, "The Case of Increased Transatlantic Cooperation on Artificial Intelligence," Center for Science and International Affairs, Harvard Kennedy School Paper (August 2020).

364 *Convention on the Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects*, United Nations, Report of the 2019 session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems, Geneva March 25-29, 2019 and August 20-21, 2019 (Geneva: United Nations, September 2019).

365 Andrew Imbrie, Ryan Fedasiuk, Catherine Aiken, Tarun Chhabra and Husanjot Chahal, *Agile Alliances: how the United States and its Allies can Deliver a Democratic Way of AI*, Center for Security and Emerging Technology (2020).

and wargames to neutrally test existing hypotheses, both to validate new concepts and to undermine concerns based on conjectures.[366]

Conclusions

Should we be concerned about the integration of artificial intelligence, machine learning, and big data in the nuclear domain? Are these emerging technologies going to disrupt strategic stability? Is there the risk that such technological developments will fuel the risk of nuclear escalation or accidental nuclear risk? Examining emerging technologies outside of existing technological trends—especially those related to the growing capabilities of counterforce—may prevent us from understanding their origins and rationale. Artificial intelligence, in particular, is not making second-strike capabilities immediately vulnerable: This trend started decades ago. Some countries may then have an incentive to integrate artificial intelligence into their nuclear arsenals because of the increasing vulnerability of their strategic forces. If so, the focus—including in arms control—should be on the cause of the problem, not on the solution countries pursue. Second, not all countries have and will have the same incentives to integrate artificial intelligence into their nuclear forces. China, for instance, has accepted a degree of vulnerability for its nuclear arsenal for decades. However, the countries with the highest incentives to automate their nuclear arsenals are also those facing the biggest technological constraints.

The interaction between emerging technologies and counterforce permit, additionally, to make some speculation about future nuclear postures. In particular, fixed ICBMs may become increasingly vulnerable. Countries may have an incentive to strengthen their underwater capabilities while the integration of artificial intelligence into air-defense systems and nuclear-delivery vehicles will generate a competition around mobile ICBMs (which have outcomes that are difficult to predict at this stage). While technology sets constraints, it is the responsibility of humans to exploit opportunities. This is the more important message from this chapter. As machines take over ever-increasing responsibilities, human beings are left with more important tasks: Human biases as well as their judgment will thus occupy a central role. Future military competition, no matter how technology-intensive, is likely to be shaped by human traits and qualities.

366 Yuna Huh Wong, John M. Yurchak, Robert W. Button, Aaron Frank, Burgess Laird, Osonde A. Osoba, Randall Steeb, Benjamin N. Harris, and Sebastian Joon Bae, *Deterrence in the Age of Thinking Machines* (Santa Monica, CA: RAND Corporation, 2020).

Artificial Intelligence and Deterrence: A View from Europe
Laura Siddi[367]

Introduction

An emerging disruptive technology, artificial intelligence (AI) is increasingly seen as a game changer that—in the words of Emmanuel Macron—"will raise a lot of issues in ethics, in politics, it will question our democracy and our collective preferences."[368] Its impact is such that it has often been compared to other grand scientific discoveries like electricity, and the World Economic Forum identified it as one of the driving factors of a new industrial revolution.[369] Indeed, AI and automation have come to define a new phase of the "digital revolution" (or disruption) triggered by the advent of digital computing towards the end of the 20th century.

The military domain is not excluded from this revolution. AI will, in all likelihood, have implications for warfare. The disruptive potential of a technology that enables machines to substitute or replicate human judgement and the corresponding challenges for strategic stability are not negligible. With multiple applications across various domains, AI raises many questions about the risks and opportunities it entails, especially in the field of defense. What is the added value of military applications of AI? What are their limitations? Is deterrence too old and outdated an idea, detached from or made redundant by a digital world? The adoption of AI in certain areas can present many benefits, but there are also costs: AI could be "weaponized" and become an instrument of warfare.

This chapter explores the potential implications of AI for deterrence and how European states have begun to engage with AI at a national and regional level. While AI introduces a series of ambiguities that may undermine deterrence, the uncertainties that would seem to hinder deterrence may work in its favor. As the implications of AI—particularly in the realm of security and defense—remain contested and open to debate, its geopolitical implications are already apparent. The quest for technological superiority is defining the contours of an international landscape that finds the United States and China at the forefront of innovation and Europe struggling to catch up. The AI strategies of European states reveal an interest

367 The views expressed in this paper are my own and do not represent the opinions of any entity whatsoever with which I have been, am now, or will be affiliated.

368 Nicholas Thompson, "Emmanuel Macron Talks to WIRED About France's AI Strategy," *Wired* (March 31, 2018). https://www.wired.com/story/emmanuel-macron-talks-to-wired-about-frances-ai-strategy/. Accessed January 19, 2021.

369 Klaus Schwab, "The Fourth Industrial Revolution. What It means and How to Respond," *Foreign Affairs* (2015). https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution. Accessed January 19, 2021. See also: World Economic Forum, Centre for the Fourth Industrial Revolution (2020). https://www.weforum.org/centre-for-the-fourth-industrial-revolution/about. Accessed January 19, 2021.

in investing more in AI so as to take advantage of all the benefits this technology offers. They also recognize its risks. However, national approaches—and thereby also national priorities—may vary, especially with regard to AI applications in security and defense. As countries develop their own AI plans, the European Union and NATO can have a role in fostering cooperation in this highly competitive sector. National priorities will likely determine what this cooperation might look like and Europe's position in the digital world. Given the importance of perceptions, they will also have an impact on how states choose to tackle the uncertainties created by the adoption of a dual-use technology like AI in the military field. Strategic communications and dialogue at different levels can help clear some of these ambiguities and avoid miscalculation and unintended escalation.

Emerging "Disruptive" Technologies and Artificial Intelligence

Defining what falls under the category of "emerging technologies" is not always clear.[370] "Emerging" may refer to technologies that are new, still under development, or already available but yet to be perfected or gain traction among potential users. Those most commonly recognized emerging technologies include AI and autonomous systems, big data and advanced analytics, cyber capabilities, hypersonic weapons, anti-satellite weapons, quantum computing, novel materials, and additive manufacturing.

A shared characteristic among many emerging technologies is their "disruptive" potential: their expected ability to yield wide social and economic effects. "Disruptive" is not necessarily negative, but rather indicates how new technologies have the potential to revolutionize—for better or worse—current and future trends. However, not all emerging technologies are disruptive, and not all disruptive technologies are emerging. For example, the innovative use of an existing technology or the use of a combination of existing technologies can be labelled as "disruptive." At the same time, not all new technologies or scientific discoveries are "emerging disruptive technologies" since some of these technologies never leave the laboratory or make it to market.[371] Emerging disruptive technologies are also often ambiguous. They can be "dual-use" in both application and intent—in other words, they can have both civilian and military applications and can be used for beneficial or malicious purposes.

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370 The NATO Science and Technology Organization (STO) provides some useful definitions for emerging and disruptive technologies in *Science and Technology Trends: 2020-2040*: "Emerging technologies are those technologies or scientific discoveries that are expected to reach maturity in the period 2020–2040, that are not widely in use currently or whose effects on Alliance defence, security and enterprise functions are not entirely clear. Disruptive technologies are those technologies or scientific discoveries that are expected to have a major, or perhaps revolutionary, effect on NATO defence, security or enterprise functions in the period 2020–2040." NATO Science & Technology Organization, *Science and Technology Trends: 2020-2040* (2020), p6. https://www.nato.int/nato_static_fl2014/assets/pdf/2020/4/pdf/190422-ST_Tech_Trends_Report_2020-2040.pdf. Accessed January 19, 2021.

371 The scale of dissemination of new technologies is an important factor in these distinctions: a potentially disruptive technology is one that has been widely adopted and employed. Another is their impact: emerging disruptive technologies are those that upset an established course of action or way of doing things. Philip M. Breedlove and Margaret E. Kosal, *Emerging Technologies and National Security: Russia, NATO and the European Theater, Governance in an Emerging New World*, Winter Series, Issue 319, Hoover Institution (2019).

AI is one such technology, with applications across different domains. AI generally refers to machines capable of human-level cognition and thus perform tasks that normally require human intelligence, such as recognizing patterns, learning from experience, drawing conclusions, and making predictions.[372] In the military sphere, applications of AI include intelligence, surveillance, and reconnaissance (ISR) systems; command, control, communications, and intelligence (C3I) systems; automatic target recognition (ATR) technology; big data-driven modelling; and intelligence analysis to locate movements of troops and assets.[373]

AI can also be used as a tool of political warfare to generate and spread misinformation (e.g., through deepfakes) among selected target audiences[374] and influence public opinion.[375] AI systems can be programmed to possess different levels of autonomy, from early AI automated systems that performed scripted tasks following a specific set of rules/algorithms to more autonomous systems that recognize patterns and improve their performance through machine learning methods. Most machines currently available have varying degrees of autonomy and fall within the two extremes of "low autonomy/automated systems" and "fully autonomous systems."[376]

AI and Its Implications for Deterrence and Security

AI presents a series of ambiguities that could, on one hand, improve security and reliability but, on the other, could increase the likelihood of miscalculation and unintended escalation. For example, the adoption of AI and automated or autonomous systems in the military can increase a system's reliability; reduce the risk of accidents; produce improvements in ISR; allow more precise targeting; and limit costs and decision–action times. Yet these features also raise concerns about AI's military applications.[377]

For instance, AI can be used to reduce exposure to cyberattacks through tools designed to detect network anomalies and identify potential vulnerabilities. At the

372 NATO Science & Technology Organization, *Science and Technology Trends: 2020-2040*.

373 James Johnson, "Artificial Intelligence: A Threat to Strategic Stability," *Strategic Studies Quarterly* 14, no. 1 (Spring 2020), p16–39.

374 Some actors are more susceptible to this type of strategy. Artificial intelligence can help map an individual's digital footprint to create behavioral profiles to be used for blackmail or for targeted influence operations.

375 Congressional Research Service, "Defense Primer: Emerging Technologies" (2019). https://crsreports.congress.gov/product/pdf/IF/IF11105. Accessed January 19, 2021. See also: NATO Strategic Communications Centre of Excellence, "The Role of Deepfakes in Malign Influence Campaigns" (2019). https://www.stratcomcoe.org/role-deepfakes-malign-influence-campaigns. Accessed January 19, 2021.

376 Mary L. Cummings, "Artificial Intelligence and the Future of Warfare," Chatham House Research Paper (2017). https://www.chathamhouse.org/sites/default/files/publications/research/2017-01-26-artificial-intelligence-future-warfare-cummings-final.pdf. Accessed January 19, 2021; and Forrest E. Morgan, et al., *Military Applications of Artificial Intelligence - Ethical Concerns in an Uncertain World* (Santa Monica, CA: RAND Corporation, 2020). https://doi.org/10.7249/RR3139-1. Accessed January 19, 2021.

377 Forrest E. Morgan, et al., *Military Applications of Artificial Intelligence - Ethical Concerns in an Uncertain World*; and Michael C. Horowitz, et al., "A Stable Nuclear Future? The Impact of Autonomous systems and Artificial Intelligence," Cornell University (2019). https://arxiv.org/ftp/arxiv/papers/1912/1912.05291.pdf. Accessed January 19, 2021.

same time, it could itself represent a vulnerability that potential adversaries can exploit: Future cyberattacks could target operating and autonomous systems and go undetected for some time before being identified and countered. By increasing the speed and power of existing cyber tools, AI could make it easier and cheaper to carry out cyberattacks. Despite (or because of) AI advancements, establishing with certainty who is behind an attack remains difficult. This could create misunderstandings and trigger a series of dangerous spillover effects, especially in the event that nuclear systems become the target of cyber (offensive or espionage) operations.[378]

In the nuclear realm, AI can help mitigate some uncertainties around adversary actions through data collection and processing on the location and movements of its forces, including the movement of nuclear systems. This also means, though, that AI may allow states to correctly locate and target second-strike capabilities. In an environment of deep mistrust, perceptions about the viability of second-strike capabilities influence the way nuclear possessors behave and what type of control or autonomy they choose for their nuclear systems.[379]

Automation is not radically new: Early warning and nuclear command and control (NC2) systems already have some level of automation that helps operators identify threats. Advanced AI capabilities can improve existing systems, reducing the risk of false alarms, allowing operators to process data and make decisions more rapidly, and ensuring that effective and timely communication is maintained at all times. In addition, new capabilities with various levels of autonomy can also be incorporated in nuclear launch platforms and delivery vehicles. States might decide to deploy nuclear delivery platforms that do not require human presence for launch authorization, which would present a series of advantages: They could be kept closer to their designated targets and for longer than the systems that require maneuvering by humans. They could also serve as a signaling tool and enhance second-strike capabilities.[380]

A principal challenge with automation, however, relates to the level of trust operators have in machines and how much control states are willing to delegate to them. While reliance on machines could help reduce the risk that human biases influence decisions, it does not eliminate it entirely. AI heavily depends on input data and algorithms that could be based on inaccurate, flawed, or biased assumptions, leading to errors or imprecise and nonobjective conclusions. Machine or automation biases can also be problematic: Computers are not infallible and they lack human qualities—such as empathy—that can help mitigate tensions. Overreliance on machines[381] could lead to errors of judgement, should the data provided by "black box" algorithms be inadequately scrutinized or flawed. In a competitive environment in which decisionmakers are

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378 James Acton, "Cyber Warfare and Inadvertent Escalation," *Daedalus* 149, no. 2 (2020), p133–149.

379 Forrest E. Morgan, et al., *Military Applications of Artificial Intelligence - Ethical Concerns in an Uncertain World.*

380 Michael C. Horowitz, et al., "A Stable Nuclear Future? The Impact of Autonomous systems and Artificial Intelligence."

381 Overreliance on machines could also have detrimental effects on resilience and on the operational capability to perform tasks without the help of AI, in the event that these systems fail or become unavailable.

expected to make swift decisions (at machine speed) to avoid being at a disadvantage, they may feel pressured to employ new AI systems before they are mature, and human–machine interaction failures may generate vulnerabilities or lead to errors, which could have unimaginable costs in the nuclear domain.[382]

AI-augmented systems also pose a series of ethical and operational questions. Who is responsible for machine errors? How should states respond to a cyber operation where attribution is unclear or contested? Could AI be perceived as a guarantor of impunity and tempt states to launch an attack under the assumption that it could go undetected or lead to few or no consequences? The answers are not clear-cut, but complex—and exacerbated by the fact that AI is not simply a technology per se, but an enabling technology that can work as a force multiplier, playing on synergies among different technologies (such as cyber).

These considerations have clear implications for deterrence. Emerging disruptive technologies like AI have the potential to alter the character of warfare, as nuclear weapons did when they were first developed. However, this does not necessarily mean that deterrence is a concept that belongs to the past. Nor should it be seen as a static concept, but rather something that can evolve with time to consider new variables.

One new variable to consider is how AI-enabled technologies could affect the credibility of deterrence. For example, the problem of attribution in the cyber realm could make states more prone to launch a cyberattack on each other without fearing a reaction. In addition, AI could provide states with a better ability to locate and target the second-strike capabilities of a potential adversary, eliminating the threat of a retaliatory attack. The introduction of fully autonomous systems with no human supervision could increase the chances of errors and accidents, which could cause deterrence to fail.

But the same ambiguities and uncertainties that would seem to hinder deterrence could work in its favor: Out of fear, states could decide to avoid any type of offensive action that could prompt an escalatory response. In this regard, the question is not whether deterrence is still a valid strategy, but whether it can work against new types of threats. How should states respond to the different applications of a technology that is not a weapon itself, but can be used with malicious intent, lower the nuclear threshold, and increase the risks for escalation?

Looking at this question through the prism of the security dilemma, perceptions are paramount and will affect how states decide to use AI technologies. The different applications of AI and their corresponding implications feed the security dilemma, adding new dimensions to the traditional concepts of defense and strategic stability. This is especially true when one considers how AI can be used to manipulate

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382 Forrest E. Morgan, et al., *Military Applications of Artificial Intelligence - Ethical Concerns in an Uncertain World*; Michael C. Horowitz, et al., "A Stable Nuclear Future? The Impact of Autonomous systems and Artificial Intelligence;" James Johnson, "Artificial Intelligence in Nuclear Warfare: a Perfect Storm of Instability?" *The Washington Quarterly* 43, no. 2 (2020), p197; and James Johnson, "Artificial intelligence and future warfare: implications for international insecurity," *Defense & Security Analysis* 35, no. 2 (2019), p147–169.

perceptions through targeted information campaigns that can undermine a state's internal and external stability (influencing the opinions of a state's domestic audience and/or undermining alliances). In a world where perceptions influence the way states interpret and react to threats, AI can represent a challenge for strategic stability, since it can increase the risks of miscalculation and unintended escalation. It can also prompt a global competition among states that try to outdo their potential adversaries in technological innovation. We could then possibly see a "security dilemma 3.0" that emphasizes the impact of technological advancements on security considerations.

Global Competition for Data and the European Context

Technological advancements are contributing to shape a system where global competition for data—the "raw material" for AI—and leadership in AI is influencing states' domestic and foreign policy decisions. The information superiority guaranteed by this technology, as well as its advantages in different areas, are well understood by national leaders, who are promoting growing investments in R&D. Highlighting the important geopolitical implications of AI, Russian President Vladimir Putin notably affirmed in 2017 that "The one who becomes the leader in this sphere will be the ruler of the world."[383] Along with India, Russia is among the countries that are more invested in AI technologies—especially in its military applications—but for the time being, the United States and China are leading the field.[384] Where does this leave Europe?

Europe and European countries in general seem to be falling behind in the quest for digital superiority. This does not mean that European leaders do not recognize the relevance of technological innovation and its potential implications. In 2019, Angela Merkel underscored the need for Europe to define its "independent" position in the digital world: "So many companies have just outsourced all their data to U.S. companies…I'm not saying that's bad in and of itself—I just mean that the value-added products that come out of that, with the help of artificial intelligence, will create dependencies that I'm not sure are a good thing."[385]

Similar concerns about data control and access have been raised by Emmanuel Macron on several occasions.[386] In fact, Germany and France recently launched a project to create a cloud computing platform, Gaia-X, so as to develop a European alternative to the U.S. and Chinese tech giants. The official website dedicated to Gaia-X is telling: It defines the project as "initiated by Europe for Europe" with the aim

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383 CNBC, "Putin: Leader in artificial intelligence will rule world" (September 4, 2017). https://www.cnbc.com/2017/09/04/putin-leader-in-artificial-intelligence-will-rule-world.html. Accessed January 19, 2021.

384 Michael C. Horowitz, "Strategic Competition in an Era of Artificial Intelligence," Center for a New American Security (2018). https://www.cnas.org/publications/reports/strategic-competition-in-an-era-of-artificial-intelligence. Accessed January 19, 2021.

385 Guy Chazan, "Angela Merkel urges EU to seize control of data from US tech titans," *Financial Times* (2019). https://www.ft.com/content/956ccaa6-0537-11ea-9afa-d9e2401fa7ca. Accessed January 19, 2021.

386 For example, during a 2019 event, the French President reportedly affirmed: "The battle we're fighting is one of sovereignty…If we don't build our own champions in all areas—digital, artificial intelligence—our choices will be dictated by others." Radio France International, "Macron throws €5 billion at digital start-ups" (2019). https://www.rfi.fr/en/france/20190918-macron-throws-5-billion-digitl-startups. Accessed January 19, 2021.

"to develop common requirements for a European data infrastructure."[387] Creating a European data infrastructure is considered a step towards Europe's digital sovereignty, as well as a way to improve data protection and security, promoting "a new culture of artificial intelligence based on the principles of openness, interoperability, transparency and trust."[388] European administrations are now putting more emphasis on their digital strategies, and Gaia-X is one example of the actions being taken in this field. A closer look at the strategies of some European states can help provide a clearer picture of where Europe stands in the global competition for digital superiority.

The United Kingdom's AI Strategy

The United Kingdom released the AI Sector Deal, its AI strategy, in 2018.[389] The deal is built around five principles, the "foundations of productivity" already indicated in the U.K. industrial strategy: ideas, people, infrastructure, business environment, and places.[390] Accordingly, it plans to invest in R&D and spearhead a series of initiatives across these sectors to make the United Kingdom "the world's most innovative economy."[391] In order to realize all the social and economic benefits that AI applications entail, it further recommends establishing partnerships between businesses, academia, and public institutions.[392] The strategy then focuses on the relevance of data availability and on the need to create secure data sharing frameworks, recognizing that "some of the most valuable data—in terms of its potential for enabling innovation, improving services of realising public sector savings—cannot be made open because it contains nationally critical, personal, or commercially sensitive information."[393]

The British AI strategy does not include specific references to its implications for security and defense, though it does stress the importance of strengthening the country's cybersecurity capabilities as captured in other official documents.[394] For instance, the National Cyber Security Strategy outlines three objectives: to defend, to

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387 See the website: GAIA-X: A Federated Data Infrastructure for Europe (2020). https://www.data-infrastructure.eu/GAIAX/Navigation/EN/Home/home.html. Accessed January 19, 2021.

388 EU press release, "Germany and France take the lead as Europe makes first step towards building a European data infrastructure" (2020). https://www.data-infrastructure.eu/GAIAX/Redaktion/EN/Press-Releases/20200604-germany-and-france-take-the-lead-as-europe-makes-first-step-towards-building-a-european-data-infrastructure.html. Accessed January 19, 2021.

389 An updated version of the U.K. AI Sector Deal was published in May 2019: United Kingdom, "AI Sector Deal," Policy Paper (2019). https://www.gov.uk/government/publications/artificial-intelligence-sector-deal/ai-sector-deal. Accessed January 19, 2021.

390 Ibid.

391 Ibid.

392 Accordingly, the Ministry of Defence and the Government Communications Headquarters (GCHQ) signed a partnership with the Alan Turing Institute, the national institute for AI and data science, to develop a defense and security program. The Alan Turing Institute, GCHQ & Ministry of Defence (2020). https://www.turing.ac.uk/collaborate-turing/current-partnerships-and-collaborations/gchq-ministry-defence. Accessed January 19, 2021.

393 United Kingdom, "AI Sector Deal."

394 For example, the National Cyber Security Strategy, the U.K., Digital Strategy and the Industrial Strategy.

deter, and to develop (i.e., to acquire the necessary cybersecurity capabilities to make sure that U.K. networks are resilient, protected, and discourage potential attackers).[395]

While the AI Sector Deal does not directly mention investments in AI military applications, interest in this field is evidenced in other policy documents and investments in new technologies. In early 2020, for example, the Defence and Security Accelerator (DASA)[396]—a cross-government organization that sources and finances innovative services to support the U.K. defense sector—announced contracts for nine projects aimed at changing the way warships make decisions and process data through AI. According to the press release that detailed the announcement,[397] DASA is working on behalf of the Defence Science and Technology Laboratory (DSTL) to examine how defense platforms can be designed to exploit technological advancements in the fields of automation, autonomy, machine learning, and AI.

This is done within the framework of the DSTL Intelligent Ship project, launched to develop innovative technologies that can be used across different defense domains to enhance the use of intelligent systems within future platforms.[398] The vision underpinning the Intelligent Ship project is indicative of the British government's approach to AI: "Automation, autonomy, machine learning, and AI will be closely integrated and teamed with human operators. To enable this, defence platforms will be designed to facilitate human-machine teaming and collaboration of AI. This will lead to timely, more informed, and trusted decision-making and planning, within complex, cluttered, contested, and congested operating and data environments."[399] The project recently entered its second phase with a call for plans to support the evaluation and demonstration of a range of human–machine teams (or agents for decisionmaking) and their integration with an evaluation environment.[400]

France's AI Strategy

France published AI for Humanity, its AI Strategy, in March 2018.[401] The strategy is largely informed by the conclusions of a study led by Cedric Villani, a member of

395 U.K. Government, "National Cyber Security Strategy 2016-2021" (2016). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/567242/national_cyber_security_strategy_2016.pdf. Accessed January 19, 2021.

396 For more information about DASA, see: U.K. Government, "Defence and Security Accelerator (DASA)" (2020). https://www.gov.uk/government/organisations/defence-and-security-accelerator/about. Accessed January 19, 2021.

397 U.K. Government , "Revolutionary Artificial Intelligence warship contracts announced" (2020). https://www.gov.uk/government/news/revolutionary-artificial-intelligence-warship-contracts-announced. Accessed January 19, 2021.

398 Ibid.

399 U.K. Government, "Competition Document: Intelligent Ship Phase 2," DSTL Notice (2020). https://www.gov.uk/government/publications/competition-intelligent-ship-phase-2/competition-document-intelligent-ship-phase-2. Accessed January 19, 2021.

400 Ibid.

401 The main points of the French strategy are presented in a dedicated website: AI for Humanity, "French Strategy for Artificial Intelligence" (2020). https://www.aiforhumanity.fr/en/. Accessed January 19, 2021. There seems to be no specific strategy document other than a presentation speech by Emmanuel Macron and the report that informed the strategy. All these sources can be seen as complementary; each provides useful information about the French AI work plan.

Parliament and a mathematician.[402] During its conference unveiling, President Macron underscored four priorities: (1) establishing an AI ecosystem in France and Europe to develop and attract the best talents in the field, (2) defining a policy on open data, (3) improving competitiveness in the AI sector through public and private investments, and (4) creating an ethical framework for the use of AI systems. In particular, Macron emphasized the need to foster greater regional cooperation, beginning with investments in Franco–German projects.[403] Developing an aggressive data policy centered around sovereignty and strategic autonomy is a key feature of the French strategy, where it is seen as essential to keep France—and Europe—from becoming "digital colonies" of the Chinese and American tech giants.[404]

The French AI strategy is notable because it directly refers to the application of AI in defense and security; significantly, it is one of the four priority sectors detailed in the strategy, along with health, transport, and the environment. The government expects these sectors to offer the best comparative advantages because they are areas of excellence for Europe and France; they generate public interest, and they attract public and private investment. One more reason for their prioritization is that strong public leadership is deemed necessary to promote changes in these sectors. According to the strategy, sector-specific AI policies should therefore be developed, tested, and implemented. The Villani report elaborates on this, advocating for European cooperation in the four priority areas, albeit recognizing that this may only be immediately possible in the transport sector. Legislative and regulatory disparities make harmonization in the other areas, including defense, more challenging and a two-phased approach preferable—with developments consolidated at the domestic level first, and then at the European level.[405]

As laid out in the French strategy, efforts to enhance French AI capabilities should then include investments in R&D to increase competitiveness and to create a network of interdisciplinary institutes for artificial intelligence. Other elements taken into account in the French strategy are the implications of AI applications for labor, for the environment, and for inclusivity and diversity. The safety of AI systems—in particular, those systems that could cause damage in the event of an attack—and the ethical and security questions surrounding autonomous systems are also given careful

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402 Cédric Villani, *For a Meaningful Artificial Intelligence—Towards a French and European Strategy*, AI for Humanity (2018) https://www.aiforhumanity.fr/pdfs/MissionVillani_Report_ENG-VF.pdf. Accessed January 19, 2021. The French National Research Institute for Research in Digital Science and Technology (Inria) oversees the implementation of this strategy. For more information, see: Inria, "The AI mission: The National Artificial Intelligence Research Program" (December 17, 2020). https://www.inria.fr/en/ai-mission-national-artificial-intelligence-research-program#:~:text=The%20French%20AI%20strategy,Institute's%20action%20in%20artificial%20intelligence. Accessed January 19, 2021.

403 Emmanuel Macron, "Discours du Président de la République Emmanuel Macron #AIFORHUMANITY," *Élysée* (2018). https://www.elysee.fr/emmanuel-macron/2018/03/29/discours-du-president-de-la-republique-sur-lintelligence-artificielle. Accessed January 19, 2021.

404 Cédric Villani, *For a Meaningful Artificial Intelligence—Towards a French and European Strategy*.

405 Ibid. See also the website: AI for Humanity, "French Strategy for Artificial Intelligence" (2020). https://www.aiforhumanity.fr/en/. Accessed January 19, 2021.

consideration. In particular, Lethal Autonomous Weapons Systems (LAWS) raise a number of concerns. Recalling that all weapon systems are subject to international and humanitarian law, the Villani report suggests the establishment of an observatory to monitor the development of any such weapons.[406]

One year after the publication of the report on the web site AI for Humanity, the French Ministry of the Armed Forces released its military AI strategy, *Artificial Intelligence in Support of Defense*.[407] The strategy reflects many of the themes already examined in the Villani report, analyzing the opportunities and risks that accompany AI technologies in the military field. Notably, it is stressed that further progress is needed before these technologies can be used in the defense sector in a controlled manner. The strategy notes that, for the armed forces, AI technologies are not an end in themselves "but rather a means to help them continue to perform their missions."[408] Accordingly, the document presents a road map for the integration of AI within the French armed forces and the Defense Ministry as a whole. The plan calls for investments in R&D, the establishment of strategic partnerships and international cooperation mechanisms, the creation of a ministerial committee to address the ethical issues that future AI military applications could raise, and the development of a ministerial data policy. The potential impact of AI technologies on cyber defense is also considered.[409]

The importance of data control to avoid dependencies is a recurrent theme. The military strategy acknowledges the existing international competition in AI, with two superpowers, the United States and China, controlling a large amount of data. Meanwhile the E.U. is establishing itself as "an aspiring intermediate power," whose approach to legal and ethical issues could be an asset or have negative repercussions. France is part of a second circle of countries—with Germany and the United Kingdom—that present some advantages, but lack a sufficient critical mass.[410] With regard to some of the questions raised by the potential development of fully autonomous weapons systems, the document produced by the Ministry of Armed Forces makes it clear that "France has no plans to develop fully autonomous systems where human

406 Ibid.

407 French Ministère des Armées, *Artificial Intelligence in Support of Defense*, Report of the AI Task Force (2019). https://www.defense.gouv.fr/salle-de-presse/communiques/communique_publication-du-rapport-du-ministere-des-armees-sur-l-intelligence-artificielle. Accessed January 19, 2021.

408 Ibid, p3.

409 Ibid.

410 Ibid.

operators have no control over the definition and performance of their missions" and that military commanders remain responsible for the use of weapons.[411]

Key Features of the AI Strategies of Other European States

Germany's AI strategy, titled AI Made in Germany, was published towards the end of 2018.[412] The strategy largely focuses on economic and social aspects, calling for investments in R&D and European cooperation (including through Franco–German projects), and emphasizes the need for a data infrastructure and regulatory framework.[413] While the strategy briefly recognizes the risks and opportunities accompanying AI applications in emergency response and security—including data and IT security—it defers action in these areas to the relevant ministries. It reads "In response to new threats to our security from within and without the country, the Federal Government will promote research into both civil security and into the detection of manipulated and automatically generated content, also as part of its work on cybersecurity. The competent ministries will take charge of any research conducted into the use of AI to protect the country's external security and for military purposes."[414]

Similarly, the draft Italian strategy from 2019[415] touches upon economic and social issues, defining a series of objectives such as increasing R&D investments to foster innovation, consolidating AI ethical and regulatory frameworks, exploiting the potential of data economy, and supporting international and regional cooperation networks. To reach these objectives, the document recommends investments in seven key sectors: industry and manufacture, food and agriculture, tourism and culture, energy and infrastructure, health and social security, smart cities, and public administration. Notably, defense is not listed as a priority, though the draft strategy fleetingly acknowledges some of the risks related to data security and cybersecurity.[416]

The minor level of attention the German and Italian strategies pay to defense issues may find an explanation in the "specialization" of the actors involved in their development. In fact, the German strategy is the result of the joint efforts of the Federal Ministries of Education and Research, Economic Affairs and Energy, and

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411 Ibid., p10. The French Minister of Defense, Florence Parly, stressed this point in a speech on AI and defense, saying that any AI defense development will follow three principles: the respect of international law; human oversight of systems; the responsibility of commanders. Florence Parly, "Discours de Florence Parly, ministre des Armées—Intelligence artificielle et défense" (2019). https://www.defense.gouv.fr/salle-de-presse/discours/discours-de-florence-parly/discours-de-florence-parly-ministre-des-armees_intelligence-artificielle-et-defense. Accessed January 19, 2021.

412 German Federal Government, "Artificial Intelligence Strategy" (2018). https://ec.europa.eu/knowledge4policy/publication/germany-artificial-intelligence-strategy_en. Accessed January 19, 2021. See also: Die Bundesregierung, "Künstliche Intelligenz (KI) ist ein Schlüssel zur Welt von morgen" (2020). https://www.ki-strategie-deutschland.de/home.html. Accessed January 19, 2021.

413 Ibid.

414 Ibid., p17.

415 Ministero dello Sviluppo economico, "Strategia Nazionale per l'Intelligenza Artificiale (Bozza per la consultazione)" (2019). https://www.mise.gov.it/images/stories/documenti/Strategia-Nazionale-Intelligenza-Artificiale-Bozza-Consultazione.pdf. Accessed January 19, 2021.

416 Ibid.

Labor and Social Affairs.[417] Meanwhile, in Italy the lead was taken by the Ministry of Economic Development, which tasked a group of experts with the elaboration of a set of proposals for an Italian AI strategy.[418]

The major focus on industrial, economic, and social issues and the corresponding choice to rely on the ministries dealing with these issues for national AI plans could, in turn, be driven by institutional dynamics: Work on national AI strategies is being carried out within the framework of an E.U. coordinated plan,[419] which E.U. members share a commitment to. However, the emphasis placed on security dynamics can vary from one state to another, as the French strategy demonstrates. Compared to the German and Italian strategies, the Dutch AI strategy published in 2019[420] also seems to pay more attention to the way AI applications can affect the security and safety of the country's territory (although—as with the other European strategies—its approach appears to be principally structured around economic, social, legal, and ethical considerations).[421]

While a complete analysis of all European states' AI strategies is beyond the scope of this paper, some common features can be identified.[422] Overall, the official AI strategies of most European states reveal an interest in investing more in AI, and focus generally seems to be on its economic, social, and ethical implications, rather than its military applications. More specifically, a recent report by the European Commission's Joint Research Centre[423] identifies five common focus areas across national AI strategies: human capital, from the lab to the market, networking, regulation, and infrastructure. These categories refer to AI-related initiatives taken to improve education and training; invest in research and innovation; foster cooperation between the public and private sector; promote the development of rules,

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417 German Federal Government (2018), "Artificial Intelligence Strategy."

418 The draft Italian AI strategy released in 2019 was inspired by the recommendations of the group of experts appointed by the Ministry of Economic Development. Their proposals for an Italian AI strategy ("Proposte per una strategia italiana per l'intelligenza artificiale") were outlined in a document—published at the same time as the draft strategy—that was recently finalized following a public consultation. The final version of the experts' proposals, which will serve as the basis for the official Italian AI strategy, was made public in July 2020. It is structured along the same lines as the document that preceded it: Gruppo di Esperti MISE sull'intelligenza artificiale, "Proposte per una strategia italiana per l'intelligenza artificiale" (2020). https://i2.res.24o.it/pdf2010/Editrice/ILSOLE24ORE/QUOTIDIANI_VERTICALI/Online/_Oggetti_Embedded/Documenti/2021/01/05/strate.pdf. Accessed January 19, 2021.

419 For E.U. AI initiatives, see the paragraph, "The European Union and the Quest for Technological Sovereignty."

420 The Netherlands Government, "Strategic Action Plan for Artificial Intelligence" (2019). https://www.government.nl/documents/reports/2019/10/09/strategic-action-plan-for-artificial-intelligence. Accessed January 19, 2021.

421 Ibid. The Dutch strategy also notes that the Ministry of Defense is developing a "vision for AI."

422 Two monitoring services, the E.U.-led AI Watch and the OECD AI Policy Observatory (OECD.AI), help map states' priorities, by providing an overview of the different actions currently being promoted in the AI field at the national level. AI Watch is the European Commission knowledge service to monitor the development, uptake, and impact of artificial intelligence for Europe, launched in December 2018. The OECD.AI is an inclusive platform for public policy on AI. For more information, see: European Commission, "AI Watch" (2020). https://ec.europa.eu/knowledge4policy/ai-watch_en. Accessed January 19, 2021; and Organisation for Economic Co-operation and Development, "OECD AI Policy Observatory" (2020). https://oecd.ai/. Accessed January 19, 2021.

423 European Commission's Joint Research Centre, "AI Watch. National Strategies on Artificial Intelligence. A European Perspective in 2019" (2020). https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119974/national_strategies_on_artificial_intelligence_final_1.pdf. Accessed January 19, 2021.

guidelines, and standards; and encourage data collection and enhance digital and communications infrastructures.[424]

Given that AI is a general purpose technology, investments in all the fields listed above are inevitably bound to have repercussions for defense and security. Still, it is striking that the military applications of AI—and related investments—are not the object of a separate analysis. This could indicate a tendency to overlook certain aspects, but it does not exclude the possibility that military uses of AI are examined in other contexts, or that they are the object of classified discussions, the extent of which is not reflected in public policy papers. Whether or not parallel reflections on these issues are ongoing, the way they are (or are not) acknowledged in the official strategies could be seen as a message in itself and could lead to different interpretations of national priorities.

Interestingly, another report by the Commission's Joint Research on the use of AI in public services[425] indicates that most AI actions in Europe are taken in general public services, economic affairs, and health. Out of the 230 AI initiatives taken into consideration for this report, only four are in the defense field. One entails the use of AI systems for computer vision and identity recognition; another, the adoption of AI tools for natural language processing, text mining, and speech analytics. The remaining two involve AI applications for security analytics and threat intelligence. Despite the low number of AI defense initiatives officially registered, a survey completed by 18 European countries shows that the defense domain is generally regarded as one of the top five policy domains deemed as a priority for AI.[426] The fact that survey respondents were heads of departments, chief information officers, senior policy officers, and consultants (i.e., actors potentially involved in discussions and decisionmaking processes) could indicate an interest in doing more with regard to AI military applications.

The European Union and the Quest for "Technological Sovereignty"

In the complex map of AI initiatives being taken at the European level, the European Union appears to be assuming a pivotal coordinating role. In light of its competences—particularly competition rules and trade—the E.U. has initiated a number of policies and regulations in many AI-related domains that have accelerated in recent years. Achieving "technological sovereignty in some critical technology areas"[427] is among the top priorities of the E.U. Commission led by Ursula von der Leyen, but initiatives in this field have also been taken by the previous Commission.

424 Ibid.

425 European Commission's Joint Research Centre, "AI Watch. Artificial Intelligence in public services. Overview of the use and impact of AI in public services in the EU" (2020). https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120399/jrc120399_misuraca-ai-watch_public-services_30062020_def.pdf. Accessed January 19, 2021.

426 Ibid.

427 Ursula Von der Leyen, "A Union that strives for more – My agenda for Europe" (2019), p13. https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf. Accessed January 19, 2021.

Among them are the European AI strategy (with measures to boost European AI competitiveness and set ethical guidelines)[428] and the Declaration of Cooperation on Artificial Intelligence from April 2018.[429] The latter laid the foundation for the Coordinated Plan on Artificial Intelligence (presented at the end of the same year), which encouraged E.U. member states to develop their national AI strategies and to coordinate actions taken at the E.U. and national level so as to maximize the benefits of AI across Europe.[430]

The E.U. has been especially active with regard to the creation of regulatory frameworks, addressing key concerns related to consumer and data protection, and to the competitiveness of the European AI sector. The General Data Protection Regulation (GDPR), a privacy and security law, is one of the most famous examples of its actions on the normative front.[431] In 2018, a High-Level Expert Group on AI[432]—established to support the European AI strategy—completed work on ethical guidelines and on policy and investment recommendations.[433] Guidelines on ethics for trustworthy artificial intelligence were published the following year.[434] Another area where the E.U. has been playing a role is the fight against political warfare and disinformation campaigns, where it has carried out a series of programs to foster investments on AI. By the end of 2020, the program Horizon 2020 will have allocated €1.5 billion (plus €2.5 billion from public–private partnerships) to support the development of AI applications in key areas, as well as to invest in research and innovation around Europe. An additional yearly budget of €20 billion (of combined public and private investments) is foreseen for the next decade.[435]

Building ecosystems of excellence and trust to enable the development of an AI that is human-centric, trustworthy, and ethical is a central tenet of the E.U.'s approach

428 European Commission, "Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on Artificial Intelligence for Europe" (2018). https://ec.europa.eu/digital-single-market/en/news/communication-artificial-intelligence-europe. Accessed January 19, 2021.

429 European Commission, "Coordinated Plan on Artificial Intelligence" (2018). https://ec.europa.eu/knowledge4policy/publication/coordinated-plan-artificial-intelligence-com2018-795-final_en#:~:text=This%20plan%20proposes%20joint%20actions,fostering%20talent%20and%20ensuring%20trust. Accessed January 19, 2021.

430 Ibid. The plan proposed cooperation between the European Commission and E.U. members, plus Norway and Switzerland, to make Europe a world-leading region in the AI field.

431 For more information on the GDPR, see: European Union, "General Data Protection Regulation" (2020). https://gdpr.eu/. Accessed January 19, 2021.

432 The High-Level Expert Group on AI comprises 52 experts from academia, civil society, and industry.

433 For more information on the High-Level Expert Group on AI, see: European Commission, "High-Level Expert Group on Artificial Intelligence" (2020). https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence. Accessed January 19, 2021.

434 For more information on the guidelines, see: European Commission, "Ethics guidelines for trustworthy AI" (2020). https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai. Accessed January 19, 2021.

435 European Commission, "Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions on Artificial Intelligence for Europe" (2018). See also: European Commission, "Artificial Intelligence" (2020). https://ec.europa.eu/digital-single-market/en/artificial-intelligence. Accessed January 19, 2021.

to AI, as evidenced by the *White Paper on Artificial Intelligence*[436] released in February 2020 (at the same time as its European data strategy[437] to create a single market for data). Of note, the white paper proposes policies to promote AI development across Europe and examines some of the associated risks—for example, opaque decisionmaking, biases leading to discrimination, and invasion of privacy. But it does not address the issues related to the development and adoption of AI for military purposes. Work on this is currently underway at the European Defence Agency (EDA), which is due to finalize an AI action plan by the end of 2020.[438]

NATO and Emerging Security Challenges

NATO is also an interested stakeholder in the field of emerging technologies and AI, in so far as certain technologies can improve the defensive capabilities of the Alliance, or be used to challenge its security and cohesion. While "deterrence, based on an appropriate mix of nuclear and conventional capabilities, remains a core element of NATO's overall strategy,"[439] the security implications of emerging technologies are not overlooked. NATO's technological edge is considered an essential enabler for the capability of the Alliance to deter and defend against potential adversaries. This is why, as stated in the Secretary General's 2019 Annual Report, "the Alliance took major steps to address the potential impact of emerging and disruptive technologies, recognising that these technologies will have a profound impact on how the Alliance carries out its core tasks and that Allied future security will be determined by the ability to understand, adopt and implement emerging and disruptive technologies."[440]

One of the steps the report refers to is the commitment to an Emerging Disruptive Technologies (EDT) Roadmap. NATO defense ministers adopted the road map in October 2019 to help structure NATO's work in key areas: space, data, Artificial Intelligence, autonomy, hypersonic systems, new missile technologies, quantum technologies, and biotechnologies. This has enabled allies to consider the implications of emerging technologies for deterrence and defense, capability development, legal and ethical norms, and arms control aspects.[441] Since AI is one

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436 European Commission, "White Paper on Artificial Intelligence – A European approach to excellence and trust" (2020). https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf. Accessed January 19, 2021.

437 European Commission, "Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – A European strategy for data" (2020). https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1593073685620&uri=CELEX:52020DC0066. Accessed January 19, 2021.

438 European Defence Agency, "Artificial Intelligence: Joint quest for future defence applications" (2020). https://www.eda.europa.eu/info-hub/press-centre/latest-news/2020/08/25/artificial-intelligence-joint-quest-for-future-defence-applications. Accessed January 19, 2021.

439 As stated in NATO's 2010 Strategic Concept.

440 North Atlantic Treaty Organization, "The Secretary General's Annual Report 2019" (2020), p48, https://www.nato.int/nato_static_fl2014/assets/pdf/2020/3/pdf_publications/sgar19-en.pdf. Accessed January 19, 2021.

441 Ibid.

of the emerging disruptive technologies considered for the EDT road map, NATO has supported scientific cooperation between allies in this area. A significant role has been played by the NATO Science & Technology Organization (STO), which has carried out a series of projects on emerging technologies and recently published an assessment of the potential impact of emerging disruptive technologies on NATO military operations, defense capabilities, and political decisionmaking.[442] Other NATO entities and agencies are involved in AI-related initiatives—for instance, the Allied Command Transformation organized a series of events to analyze the challenges and opportunities brought about by emerging technologies.[443] Since 2010, a division within the NATO International Staff, the Emerging Security Challenges Division, focuses on nontraditional risks and challenges, including cyberdefense[444] and hybrid threats.[445]

The promotion of science and technology in NATO is a team effort driven by the voluntary collaboration of national experts from Allied and partner countries. One area where cooperation is ongoing is the development of a future concept that takes into account how disruptive technologies such as artificial intelligence, big data, and autonomy could fundamentally redefine surveillance and control in the future [helping to maintain a decision advantage after Airborne Warning and Control System's (or AWACSs) retirement in 2035]. As part of its modernization efforts, NATO is also working to enhance its strategic communications, investing in advanced technology to counter disinformation and to optimize the effectiveness of NATO's communications.[446] As the Alliance continues adapting to a rapidly changing security environment, NATO Secretary General Jens Stoltenberg said he recently launched the NATO 2030 initiative "to reflect on where we see our Alliance 10 years from now, and how it will continue to keep us safe in a more uncertain world." He appointed a group of 10 experts. NATO will engage with allies, public and private sector experts, and

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442 The assessment is the result of the work of the NATO Science & Technology Organization with a collaborative network of more than 6000 experts and associated research facilities. For more information, see: NATO Science & Technology Organization, *Science and Technology Trends: 2020-2040* (2020).

443 NATO, "Artificial Intelligence—A Game Changer for the Military" (2019). https://www.act.nato.int/articles/artificial-intelligence-game-changer-military. Accessed January 19, 2021.

444 Cyberspace was recognized "as a domain of operations in which NATO must defend itself as effectively as it does in the air, on land and at sea" at the Warsaw Summit in 2016. North Atlantic Treaty Organization, "Warsaw Summit Communiqué" (2016). https://www.nato.int/cps/en/natohq/official_texts_133169.htm. Accessed January 19, 2021.

445 North Atlantic Treaty Organization, "New NATO division to deal with Emerging Security Challenges," press release (2010). https://www.nato.int/cps/en/natolive/news_65107.htm#:~:text=The%20new%20Emerging%20Security%20Challenges,cyber%20defence%2C%20and%20energy%20security. Accessed January 19, 2021.

446 North Atlantic Treaty Organization, "The Secretary General's Annual Report 2019." See also the progress report: North Atlantic Treaty Organization, "NATO: Ready for the Future. Adapting the Alliance (2018-2019)" (2019). https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2019_11/20191129_191129-adaptation_2018_2019_en.pdf. Accessed January 19, 2021.

young leaders to provide guidance on how to make sure the Alliance is ready to face future challenges. [447]

The E.U., NATO, and Cooperation on AI

Given their respective interest in AI applications and emerging technologies, cooperation between NATO and the E.U. has already begun. The two organizations agreed to strengthen their cooperation on common challenges at the Warsaw Summit in 2016[448] and have published periodic progress reports on the results of their strategic partnership ever since.[449] The most recent report, published in June 2020,[450] notes the ongoing cooperation between NATO, NATO Science and Technology Organization, the E.U., and the EDA, with staff-to-staff contacts and high-level meetings on their respective approaches to innovation and AI. NATO and the E.U. are also collaborating on cybersecurity and defense, on plans to counter hybrid threats, and in the area of strategic communications, with a focus on hostile information activities.[451] With reference to information warfare, both organizations have promoted a series of initiatives aimed at countering disinformation and identifying reliable and unreliable news sources.[452] Governments have also been engaged in similar activities and called for an active role of social media managers in flagging or blocking fake accounts that are used to disseminate untruthful information.

The importance of cooperation on AI at different levels is an overarching theme in the AI strategies previously examined. Accordingly, efforts to foster bilateral, regional,

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447 North Atlantic Treaty Organization, "Secretary General launches NATO 2030 to make our strong Alliance even stronger" (2020). https://www.nato.int/cps/en/natohq/news_176193.htm. Accessed January 19, 2021. For more information, see: North Atlantic Treaty Organization, "Expert group report to the NATO Secretary General" (2020). https://www.nato.int/cps/en/natohq/176155.htm. Accessed January 19, 2021.

448 This intention was reiterated in a joint declaration in 2018.

449 North Atlantic Treaty Organization, "Relations with the European Union" (2020). https://www.nato.int/cps/en/natohq/topics_49217.htm. Accessed January 19, 2021.

450 North Atlantic Treaty Organization, "Fifth Progress Report on the implementation of the common set of proposals endorsed by EU and NATO Councils on 6 December 2016 and 5 December 2017" (2020). https://www.nato.int/nato_static_fl2014/assets/pdf/2020/6/pdf/200615-progress-report-nr5-EU-NATO-eng.pdf. Accessed January 19, 2021.

451 Ibid.

452 The effects of disinformation campaigns and fake news have been particularly evident during the COVID-19 crisis. In June 2020, the European Union notably called out Russia and China for engaging "in targeted influence operations and disinformation campaigns in the EU, its neighbourhood, and globally." European Union, "Coronavirus: EU strengthens action to tackle disinformation," press release (June 10, 2020). https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1006. Accessed January 19, 2021. For more information and examples of the various initiatives promoted to counter disinformation, see: European Council, Council of the European Union, "Fighting disinformation" (2020). https://www.consilium.europa.eu/en/policies/coronavirus/fighting-disinformation/. Accessed January 19, 2021; European Union, "EUvsDisinfo" (2020). https://euvsdisinfo.eu/. Accessed January 19, 2021; North Atlantic Treaty Organization, "NATO's approach to countering disinformation: a focus on COVID-19" (2020). https://www.nato.int/cps/en/natohq/177273.htm. Accessed January 19, 2021.

and even global partnerships[453] are underway. A series of elements may influence how this cooperation will develop. National priorities and domestic dynamics, including future elections, may contribute to shape the national and international debate around the advantages and disadvantages of technological advancement (and the best strategies to foster the former while avoiding the latter).

Conclusions

Global competition for data and leadership in AI is already contributing to shape a new security landscape, in which Europe is trying to find its place. European states are aware of the need to become more competitive in this sector, which is largely dominated by the United States and China. They have accordingly developed strategies to improve their prospects for innovation and take advantage of the potential opportunities accompanying technological advancements. Their AI plans reveal they are putting attention on common themes, such as the need to address the economic, ethical, and social questions AI raises, but also differing priorities, especially when it comes to AI military applications. Defense and security is one of the AI priority sectors identified in the French strategy, but military considerations are absent or given minor consideration in the official strategies of other countries. Indeed, it is possible that certain issues are discussed "behind the scenes" and open sources may offer an incomplete picture of what actions European countries have taken in the military sphere.

Nevertheless, considering the importance of perceptions, the lack of clear communications in this respect could have the effect of weakening Europe's position vis-à-vis other nations that are investing more in the field—even more so if different AI priorities correspond, or are believed to correspond, to disparities in states' capabilities. Technology gaps among allies and partner states would have to be addressed to reduce the risks emerging technologies entail and make sure that everyone can benefit from the improvements they can bring.

Strategic communications, with clear messaging and dialogue at different levels, are extremely important to mitigate some of the risks AI can entail. The many challenges presented by AI could then open the door to new opportunities for cooperation with the establishment of regulatory and transparency frameworks. Regulating the use of a widespread technology like AI through monitoring regimes and the adherence to common norms might prove difficult, but necessary nonetheless. Given the role of private companies in driving technological innovation, collaboration with the private sector and new investments in R&D are increasingly required to understand the implications and challenges of AI for digital, physical, and political

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453 A Global Partnership on AI was recently launched by Canada and France, together with Australia, Germany, India, Italy, Japan, Mexico, New Zealand, the Republic of Korea, Singapore, Slovenia, the United Kingdom, the United States, and the European Union. Ministère de l'Europe et des Affaires Étrangères, "Launch of the Global Partnership on Artificial Intelligence by 15 founding members" (2020). https://www.diplomatie.gouv.fr/en/french-foreign-policy/digital-diplomacy/news/article/launch-of-the-global-partnership-on-artificial-intelligence-by-15-founding. Accessed January 19, 2021.

security, and to ensure that states can plan accordingly. Some initiatives of this kind have already been launched and are part of ongoing efforts, but there is potential for states to do more, both at the national and at the regional level, and through existing and new public–private partnerships.

In this context, the European Union and NATO play an important role, for they can serve as fora for cooperation among states and promote common actions with regard to AI and its implications. Both are already doing so and cooperation between the two organizations is also ongoing. With the declared purpose to achieve technological sovereignty in critical areas, the E.U. has been particularly active on the economic and normative front, with investment plans to foster AI developments across Europe and with work on regulative frameworks to ensure data protection and control. NATO has started to work on the security implications of AI, which is among the technologies to be considered under the emerging disruptive technologies roadmap adopted by the Alliance's defense ministers at the end of 2019. Both NATO and the E.U. have carried out activities to counter disinformation campaigns and to address the weaponization of social media. Still, the extent of what they can do is inevitably linked to the agendas of their member states.

The security dilemma heavily depends on what states see as a threat, regardless of the original intent of that technology. Altogether, AI is not inherently malicious, but it adds a new layer of uncertainty to the security dilemma that animated the political discourse during the Cold War years. The way states see and use AI will determine whether advancements in this field will create more or fewer risks for security and stability. International cooperation and effective communications could be key to avoiding unintended escalation and ensuring effective deterrence relationships. National perspectives and priorities are bound to shape the European and Euro-Atlantic debate on these matters and will determine Europe's path in the digital world.

A Practitioner's Perspective: Modern Deterrence and the U.S.–U.K. Relationship

Peter Watkins[454]

Introduction

During the four years from the annexation of Crimea by Russia in March 2014, there was a quiet but significant evolution in British official thinking about deterrence. This paper situates the resulting concept of "modern deterrence" alongside the U.S.–U.K. nuclear relationship and bilateral deliberations on nuclear deterrence. From 2014–2018, I was the senior official in the U.K. Ministry of Defence (MOD) responsible for the U.S.–U.K. relationship. This is a strictly personal account, from a British perspective, of how the relationship evolved over those years—and how it may evolve into the future.

The Evolution of U.K. Deterrence Thinking

Even before the events of 2014, the U.K. defense policy community had started to refocus on deterrence, reflecting a growing sense that state-on-state confrontation was returning—although probably more likely to manifest itself in the Asia–Pacific region than in Europe. For the U.K., the lesson of Crimea and the Russian intervention in the Donbas was that such confrontation could take new forms (or, at least, old forms repackaged): disinformation, cyberattacks, and the use of proxies, for example. In the summer of 2014, there was concern that these methods could be replicated elsewhere in Europe, and it was not clear whether or how they could be deterred.

This led to a work stream, jointly led by the Foreign & Commonwealth Office (FCO) and the MOD, on what we called "modern deterrence"—this built on classical deterrence concepts, modified to address more amorphous threats. The first priority was to put deterrence back at the heart of British security and defense policy. This was done with the inclusion of a section on deterrence in the 2015 "Strategic Defence & Security Review" (SDSR), opening with the phrase: "Defence and protection start with deterrence."[455] Some of the main themes of modern deterrence were outlined in a keynote speech at the U.S. Strategic Command (STRATCOM) Deterrence Symposium in July 2016.[456] These included improving our understanding of potential adversaries, maximizing the utility of the full range of nonmilitary and

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military tools at our disposal, enhancing our resilience, and strengthening close coordination with allies and partners.

Meanwhile, for the U.K. and other European countries, the threat of "hybrid" or "gray zone" warfare felt increasingly real. Russia's risk appetite appeared to be growing with bolder cyberattacks and more disinformation campaigns, extending even to interference in the U.S. presidential election in November 2016. The argument was made by various commentators in London and elsewhere that Russia did not need to try to coerce the West by threats of conventional or nuclear armed attacks when it could destabilize our societies from within—and, in the event of a crisis, try to hold us to ransom by other means, such as cyberattacks on critical national infrastructure.[457] "Modern Deterrence" was the subject of a brief passage in the U.K. Government's National Security Capability Review published in late March 2018, just a few weeks after the Salisbury incident.[458] It confirmed that the U.K.'s independent nuclear deterrent "will remain essential…to deter the most extreme threats to our national security" while noting the need to be able to deter "less destructive" attacks.

The U.K.–U.S. Nuclear Relationship

The U.K.'s nuclear deterrent capability is underpinned by a close U.S.–U.K. nuclear relationship, covering both policy and programs. My post—in NATO terms, the Defence Policy Director—was at the heart of both dimensions. As well as being responsible for strategic deterrence policy, from 2011–2017 the post became the U.K. Principal[459] of the 1958 U.S.–U.K. Mutual Defense Agreement, which is the cornerstone of the bilateral nuclear relationship, particularly with respect to warheads.

Much of the detail of U.S.–U.K. cooperation under the MDA is classified but, of course, fully compliant with Article I of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). This period saw some further convergence between the two national programs. On the submarine side, both countries were (and continue to be) working on a Common Missile Compartment for their future SSBNs. And in 2016 they launched the Joint Technology Demonstrator (JTD) project on warhead safety, security, and advanced manufacturing technologies. This JTD project was referenced in testimony to Congress in 2017, and from 2017 in the U.K. MOD's annual update to Parliament on the Future Nuclear Deterrent.[460]

The policy dimension was a little more nuanced. The U.S. and the U.K. worked very closely together with France before the 2016 Warsaw Summit. The communiqué

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457 This argument was made in various fora rather than specific documents.

458 U.K. Government, "National Security Capability Review" (March 2018), p10.

459 The U.K. Principal had previously been the MOD's chief scientific adviser. In 2017, the role passed to the newly established DG Nuclear role.

460 See Statement of Lt. Gen. Frank G. Klotz, U.S. Air Force (Ret), Administrator, National Nuclear Security Administration, to the Sub-Committee on Strategic Forces, Senate Committee on Armed Services, 24th May 2017, page 3; and Ministry of Defence, *The United Kingdom's Future Nuclear Deterrent: The Dreadnought Programme*, 2017 Annual Update to Parliament (December 20, 2017), p2.

from that summit contained a major restatement of the Alliance's nuclear policy, including the first recognition in a public NATO document of the merit of "separate centers of decisionmaking" to complicate the calculations of potential adversaries—an argument that has been at the heart of U.K. nuclear doctrine for many years.[461] Similarly, the U.S. and the U.K. worked closely together in NATO's High Level Group on implementing Summit and Nuclear Planning Group decisions on the dual-capable aircraft (DCA) mission.

There was more variation elsewhere. First, as Brad Roberts has chronicled in his recent article in *Survival*, in the summer of 2016, the Obama administration toyed with the idea of adopting a no-first-use (NFU) policy. This was opposed by the executive departments, citing not least the concerns of allies.[462] U.K. nuclear doctrine does not include NFU. The most recent authoritative summary of U.K. nuclear doctrine remains the section on "The nuclear deterrent" in the 2015 SDSR, which restates the longstanding principle that "we will remain deliberately ambiguous about precisely when, how and at what scale we would contemplate their [nuclear weapons] use."[463] As Roberts' article indicates, the NFU issue could yet return if the Biden administration is receptive to the advocacy of certain senior Democrats in Congress.

Secondly, the U.K.'s renewed interest in deterrence in the broad sense conveyed by "modern deterrence" did not gain very much traction with the Obama administration in its last two years—or by the incoming Trump team. Russian interference in the U.S. presidential election in 2016 became a prime exhibit in public comments by British ministers on Russia's "sub-threshold" activities. The British tendency to situate nuclear deterrence on a broader spectrum of deterrence did not seem to be entirely shared by U.S. civilian officials—for whom nuclear deterrence remained front and center of deterrence thinking. This slight doctrinal divergence may seem too subtle to matter, but it is worth watching.

The Trump administration launched its *Nuclear Posture Review* (NPR) in 2017.[464] There was good consultation with allies, including the U.K., from the outset. The U.K. underlined the importance of maintaining a balance between deterrence and arms control, an established U.K. position reflected in the Government Motion in Parliament for the replacement of the U.K.'s strategic nuclear submarines in July 2016.[465] On

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461 North Atlantic Treaty Organization, "Warsaw Summit Communiqué," press release (2016), paragraph 53; and Ministry of Defence, "The Future United Kingdom Strategic Nuclear Deterrent Force," Defence Open Government Document 80/23 (July 1980), p5.

462 Brad Roberts, "Debating Nuclear No-first-use, Again," *Survival* 61, no. 3 (2019), p44–46.

463 U.K. Government, "Strategic Defence & Security Review" (November 2015), p34.

464 U.S. Department of Defense, *Nuclear Posture Review* (February 2018).

465 *U.K. House of Commons and House of Lords Parliamentary Debates* 63 (Hansard), Column 559 (July 18, 2016). The motion both "supports the decision to maintain the current posture by replacing the current Vanguard Class submarines with four Successor submarines" and "recognises that the UK remains committed to reducing its overall nuclear weapons stockpile by the mid-2020s; and supports the Government's commitment to continue to work towards a safer and more stable world, pressing for key steps towards multilateral disarmament."

publication, the NPR attracted criticism on two main counts. First, the decision to supplement the U.S.'s extant nuclear program by modifying a number of existing submarine-launched ballistic missile (SLBM) warheads to provide a low-yield option and by acquiring a modern submarine-launched cruise missile (SLCM). Both systems have been criticized as components of a nuclear warfighting strategy.[466] Second, the NPR's explicit statement that "deterring nuclear attack is not the sole purpose of nuclear weapons" and that nuclear weapons could be employed to deter "significant non-nuclear attacks," including "attacks on U.S., allied or partner civilian populations or infrastructure."[467] While cyberattacks were not cited specifically, they would naturally fall into this category.

Neither of these aspects of the NPR conflicted with U.K. nuclear doctrine as summarized in the 2015 SDSR. Although the U.K. has chosen to have a "minimum credible," single-system strategic nuclear deterrent of its own, it has long believed that it may be necessary to have recourse to a range of systems to counter a potential adversary's misperception that it could employ nonstrategic nuclear weapons to achieve tactical advantage in a conflict or even to terminate it on its own terms. Similarly, it has never adhered to the "sole purpose" argument.[468] The British government was criticized in certain quarters for giving public support to the findings of the NPR in February 2018—but it was entirely consistent for it to do so because, in these respects, U.S. doctrine had moved closer to the U.K.'s.

The Future of the U.S.–U.K. Bilateral Relationship

At present, both at the programmatic and policy levels, U.S.–U.K. nuclear cooperation looks well-set—the U.K. Defence Secretary recently told Parliament that "we will continue to work closely with the US to ensure that our warhead remains compatible with the Trident Strategic Weapons System."[469] But this cooperation does not exist in a strategic vacuum. There is much debate about the current and future health of the transatlantic bond more broadly, both between the U.S. and the rest of NATO collectively, and between the U.S. and individual countries such as the U.K.

With respect to NATO, the sense of a barely contained and perhaps still looming crisis is largely based upon former President Trump's past criticisms of the Alliance and its European members' contributions to their own security. The counterargument is that deeds count more than words and the U.S.'s reinforced military presence in Europe in the last few years speaks for itself. But the drivers of a more limited U.S.

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466 See Julian Borger, "US to loosen nuclear weapons constraints and develop more 'usable' warheads," *The Guardian* (January 9, 2018).

467 U.S. Department of Defense, *Nuclear Posture Review,* p21.

468 As is apparent from the language in the 2015 SDSR: "While there is currently no direct threat to the UK from states developing weapons of mass destruction, such as chemical and biological capabilities, we reserve the right to review this assurance [not to use nuclear weapons against a Non-Nuclear weapons state] if the future threat, development or proliferation of these weapons make it necessary," U.K. Government, "Strategic Defence & Security Review," p35.

469 Rt. Hon. Ben Wallace MP, written ministerial statement (February 25, 2020).

engagement in European security in the future are as much structural as personal—the growing threat from China to U.S. interests in the Indo-Pacific and the changing demography of the U.S. itself.

On the bilateral side, the U.K. has left the European Union, one of the pillars of its foreign and economic policy for more than 40 years, and now wishes to have an ambitious Free Trade Agreement with the U.S. Yet, on many of the issues of the moment, the U.K. government has tended to be closer to its European partners than the U.S.—or to have followed its own middle way, as it did for a while with Huawei and 5G. There were public rumblings that the U.S. was reviewing aspects of the bilateral intelligence relationship in response to that. But little attention—positive or negative—seemed to be paid by the upper political levels of the Trump administration to the bilateral nuclear relationship.

Any fraying of the transatlantic relationship with NATO would have consequences for nuclear deterrence. Even if U.S. declaratory doctrine remained largely unchanged and the U.S. continued to furnish weapons for the DCA mission, the credibility of extended deterrence could be reduced—although not necessarily fatally. Much would depend on the perceptions—and risk appetite—of potential adversaries. In U.S.–U.K. terms, it is entirely conceivable that the U.S. would continue to provide bilateral support to the U.K. nuclear deterrent program—but, perhaps, seek a greater financial contribution. As matters stand, it seems unlikely that the U.K. would offer to provide some sort of extended nuclear deterrence to its European partners above and beyond the existing assignment of its SSBN force to NATO.

More specifically—even if hypothetically—what if we witness an accelerating transatlantic drift, with growing doubts about the strength of the transatlantic bond but no formal parting of the ways? What happens then to nuclear deterrence? Providing that national nuclear doctrines remain broadly compatible, it is quite conceivable that nuclear deterrence would endure much as now, but primarily on a national basis (with newly modernized U.S., French, and British nuclear forces). Whether they are seen as providing an implicit extended deterrence of other allies would depend on the interpretation—by allies and potential adversaries—of the three powers' "vital interests," to use the French terminology. The U.S. could survive without its European allies, although it would be a lonely superpower. It is less obvious that France or the U.K. could sustain their political, economic, or social models in circumstances in which NATO's much-vaunted cohesion was eroding and individual allies could be picked off by Russian (or Chinese) pressure. In these circumstances, we could face a paradox: Nuclear forces would continue to deter the "most extreme threats," but we would be more likely to fall prey to the "less destructive" ones.

Conclusion

From a nuclear as well as a broader deterrence perspective, an accelerating transatlantic drift is not in our interest. But hoping that things will somehow stay the same is not realistic. We need to recognize that the character of the transatlantic

relationship will inevitably change over the coming years—that the U.S. commitment will likely reduce in terms of stationed forces and be less automatic than European allies might wish. The credibility of NATO's *overall* deterrence posture will therefore need to become *less* dependent on U.S. participation by design. This means that the European members will need to invest more in their own defense capabilities, about which they will be less than enthusiastic given the fiscal consequences of the coronavirus pandemic. Nuclear deterrence is a core component of our collective security, but it forms part of a broader deterrence spectrum. It is necessary, but not sufficient.

Transatlantic Deterrence: Taking Stock and Looking Forward

Gregory F. Giles[470]

This concluding chapter addresses two main questions: (1) what is the current state of the transatlantic discourse on nuclear deterrence, and (2) where should that discourse go from here?

What is the Current State of the Transatlantic Discourse on Nuclear Deterrence?

The road to the workshop and the event itself revealed much about the state of transatlantic discourse on nuclear deterrence, the status of the European deterrence community, and pressing substantive issues.

The transatlantic discourse on nuclear deterrence needs to be revived and expanded

Government-to-government or Track 1 consultations on nuclear issues remain strong bilaterally and within NATO. It is the interaction between nongovernment specialists (Track 2) and between those specialists and government officials (Track 1.5) where the transatlantic deterrence community is underserved.

Essentially, there are two sustained Track 1.5 transatlantic deterrence platforms: (1) the U.S.–U.K.–French trilateral dialogue organized by the Center for Strategic and International Studies (CSIS), in partnership with the Royal United Services Institute (RUSI) and the Fondation pour la Recherche Stratégique (FRS); and (2) the Wilton Park deterrence and assurance summer conference, organized by Lawrence Livermore National Laboratory's Center for Global Security Research (CGSR), the U.K. Atomic Weapons Establishment (AWE), Sandia National Laboratories (SNL), and the NATO Defense College (NDC). Track 1.5 interaction on deterrence issues outside of these venues is sporadic and nonrecurring. U.S. Track 1.5 dialogue with Europe beyond the U.K. and France is particularly underserved. In short, it appears that the transatlantic deterrence dialogue has atrophied to an even greater extent than the intra-European dialogue.

The European deterrence community would benefit from a shared sense of purpose in addressing contemporary deterrence challenges

The number of scholars and practitioners publishing on nuclear deterrence in Europe is very small. We succeeded in assembling some of the best of them in this volume. Pockets of expertise can be found at a handful of institutions across Europe

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but the bench, to use a sports euphemism, is not deep—often only one or two analysts per institute.

This community is not deeply ingrained; it functions mainly on the basis of personal relationships which, while not unusual, has its limitations (e.g., it often becomes self-selecting; less well-known analysts and perhaps those without a social media presence may be overlooked). On the continent, there are virtually no institutionalized convening mechanisms focused on nuclear deterrence. We uncovered no deterrence-focused research consortia between institutions within countries or across them. Because nuclear deterrence is politically unpopular outside of France, it lacks European champions and research funding. This is a posture that suits the Kremlin just fine.

Because what little deterrence work exists is often paired with arms control, most European security analysts are thus dual-hatted (at a minimum). One senses that this expertise is spread thin. This stems from the small pool of experts and the increasing number of arms control initiatives, not an overabundance of nuclear deterrence-focused events.

Our authors, such as Michael Rühle and Peter Watkins, have pointed out that the concept of deterrence is stretched in Europe to cover all manner of security challenges. The community seems to lack agreement on, or appreciation of, the applicability and limitations of deterrence. For its part, the U.S. deterrence community has been hard at work for well over a decade to make deterrence analysis more rigorous; the U.K. has been similarly engaged more recently. Evidence of such investment is lacking particularly among institutions within NATO states that operate dual-capable aircraft (DCA), that is, Germany, Italy, the Netherlands, and Belgium. Greater cooperation amongst European deterrence analysts would help link centers of expertise, promote a shared understanding of deterrence concepts, help draw in additional talent, and provide a stronger basis for transatlantic collaboration.

The deterrence agenda needs to be reclaimed and rebalanced

The current European deterrence agenda is largely reactive and shaped by nuclear abolitionists. Even the relationship between deterrence and the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is contested and needs to be rebalanced.[471] A heavy risk inclination, if not alarmism, is being deeply engrained particularly by those European nongovernmental organizations intent on delegitimizing nuclear deterrence. By contrast, substantive work on nuclear deterrence under current conditions and nuclear modernization is in short supply. Application of the U.S. Strategic Command's (USSTRATCOM) rigorous approach to contemporary deterrence analysis (e.g., the 2006 Strategic Deterrence Joint Operations Concept) is not evident in European

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471 See, for example, Gregory F. Giles, "Deterrence and the NPT: Compatible and Reinforcing," *Survival* 62, no. 4 (August/September 2020), p135–156.

works, and in-depth analysis is rare.[472] Greater convergence by the European deterrence community would enable it to shape the deterrence agenda proactively. Restoring the transatlantic deterrence dialogue would provide an analytical force multiplier.

Europe remains wedded to the deterrence–disarmament balancing act

The conjoining of deterrence and disarmament is a thread that runs through Pia Fuhrhop's and Michal Onderco's chapters on the German and Dutch nuclear debates, as well as Jessica Cox's and Joseph Dobbs' chapter on NATO, and Anna Péczeli's chapter on a new dual-track approach. In his chapter, Łukasz Kulesa described the deterrence–disarmament nexus as, "[a] fragile, and frequently contested, balancing act between the seemingly incompatible concepts of nuclear deterrence and disarmament [that] has been practiced by NATO member states since the 1970s. It boils down to two elements: preserving the policy of nuclear deterrence and, simultaneously, support for reducing the number and salience of nuclear weapons." The connection stems from the groundbreaking work in 1961 by Thomas Schelling and Morton Halperin, *Strategy and Arms Control.*[473] It became institutionalized by NATO following the 1967 Harmel Report.

As our NATO chapter notes, the Harmel Report established defense and deterrence as NATO's first function; its second, détente. In the author's view, this indicates a prioritization that is not reflected in the European discourse. In practice, many NATO member states and analysts therein heavily favor the second function, détente and associated disarmament pursuits. Emmanuelle Maitre reminds us that France is an important exception in this regard. Nonetheless, we hear calls from European analysts to encourage the Russians to move their SSC-8 cruise missiles east of the Urals, as if the regime that violated a long-standing treaty to produce the missiles would not then ignore a new agreement and redeploy them closer to NATO whenever it saw fit. Such arms control proposals are divorced from strategic reality and deterrence calculations. For much of Europe then, the "balancing act" is at best, a misnomer. Disarmament studies are well-funded by European governments, foundations, and academia; deterrence studies are not.

The challenge confronting the transatlantic deterrence community is clear—to restore the Western "balancing act" by promoting greater investment of resources and intellect into deterrence analysis. As Michael Rühle observes, the West is suffering a broader crisis of confidence in resisting the efforts of Russia and China to dismantle the post-World War II order. It is hard to imagine restoring that confidence without a sound deterrence strategy, and it is hard to imagine developing that strategy without a vibrant transatlantic deterrence community.

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472 A notable exception in this regard is, Stephan De Spiegeleire, Khrystyna Holynska, Yar Batoh, and Tim Sweijs, *Reimagining Deterrence: Towards Strategic (Dis)Suasion Design*, Hague Center for Strategic Studies (March 2020). https://hcss.nl/sites/default/files/files/reports/Reimagining%20deterrence_final.pdf. Accessed January 19, 2021. The Hague Center has a close relationship with the RAND Corporation.

473 Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (New York: Twentieth Century Fund, 1961).

The impact of emerging technology on deterrence is uncertain but of keen interest

As Laura Siddi points out in her chapter, the potentially disruptive impact of emerging technology is not unique to our time. Indeed, major power competition in military technology predates the Cold War by at least a millennium. The Sputnik-induced race in ballistic missile capabilities is well-known to Cold Warriors and persists into the present era of hypersonics and renewed major power competition. It is important to recall that both space and the electromagnetic spectrum were contested domains well before the current concerns about directed energy anti-satellite weapons and cyber intrusions. Likewise, concerns about false alarms have been taken seriously by the nuclear community from the early days of the Cold War. They are why, for example, the United States has long relied on the principle of "dual phenomenology"[474]—radar and infrared sensors to confirm missile launches—and why it has always kept humans in the loop between nuclear attack detection and response.

That said, the rapid advances in artificial intelligence (AI), machine learning, and big data do raise important questions for nuclear deterrence. As Andrea and Mauro Gilli point out, much of the commentary to date on the subject forecasts risks for strategic stability. This is understandable given the potential consequences of acting on false or misleading information. But the Gillis rightfully point out that we are at a very early stage of incorporating AI, the extent of risk is not clear, and indeed emerging technologies could benefit strategic stability—a view shared by Laura Siddi, who writes "This does not necessarily mean that deterrence is a concept that belongs to the past. Nor should it be seen as a static concept, but rather something that can evolve with time to consider new variables." It is precisely this type of critical thinking that the transatlantic deterrence community should encourage.

Moreover, as the Gillis observe, to the extent that AI becomes a facet of the nuclear deterrence mission, it will increase the importance of keeping a human in the loop to make critical contextual judgements. This, in turn, underscores that the generation of personnel who will perform the nuclear deterrence mission in a more pronounced AI environment, or will advise policymakers on it, should be grounded in such disciplines as information technology (to understand the strengths and weaknesses of AI), behavioral science (to understand decisionmaking dynamics, particularly under stress), and history and political science (to provide critical context and discern false alarms). Laura Siddi adds another important discipline, communications, "to signal resolve…through clear messaging to help avoid misinterpretations." The transatlantic deterrence community should consider what roles it can play in supporting such education and mentoring.

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474 Robert D. Critchlow, "Nuclear Command and Control: Current Programs and Issues," Congressional Research Service Report to Congress (May 3, 2006), p6. https://fas.org/sgp/crs/nuke/RL33408.pdf. Accessed January 19, 2021.

Where Should the Transatlantic Deterrence Discourse Go from Here?

To enhance transatlantic discourse going forward, two main collaborative thrusts can be envisioned, one focused on community building and another on establishing and pursuing a research agenda. Suggestions along those lines are offered below.

Community building

To have greater impact on scholarship and public policy, a shared sense of purpose in the European deterrence community, as noted above, would be beneficial. It would also help to adopt a higher public profile, the better to be heard. Three activities in particular can facilitate this process:

(1) Promote and sustain deterrence education within Europe. Michael Rühle calls attention to this need. In light of the deterrence/arms control overlap (which is not unique to Europe), how does nuclear deterrence expertise get developed? It requires interest on the part of academia, as well as students, and it requires funding in terms of chairs on security studies. Generating both interest and funding is likely to be a country-specific challenge, exacerbated by the COVID-19 pandemic, but collaboration among European institutions potentially can yield brainstorming strategies, lessons learned, and partnerships to help raise the profile of deterrence studies within academia.

Mechanisms exist to generate and sustain student interest in nuclear matters, in the form of the CSIS-initiated Project on Nuclear Issues (PONI) which has migrated to the U.K. and France, and NATO's Early Career Nuclear Strategy Workshop. In 2016, USSTRATCOM created the Deterrence and Assurance Academic Alliance (DAAA) to promote strategic studies at U.S. universities. Based on the USSTRATCOM model, the U.K. recently stood up its own DAAA. The model may have further applicability on the European continent. USSTRATCOM also has made extensive use of tabletop exercises (TTXs) to help generate student and faculty interest in deterrence. Such deterrence-specific TTXs would be a natural addition to help counterbalance Europe's emphasis on arms control simulations, as Michael Rühle points out.

In recruiting students and teaching them about deterrence, it is also important to prepare them to engage in public debate. Members of the European deterrence community themselves lament that the small size of the community is compounded by its reluctance to engage in public discussion and debate. Yet ceding the public discourse to nuclear abolitionists confers upon them disproportionate influence and access by which to delegitimize deterrence. Public speaking and debate should figure prominently in deterrence education.

In terms of a curriculum attuned to the times, deterrence education must reflect realism—a balanced representation of what deterrence is and what it is not. As our contributors make clear, deterrence is not a panacea for all levels of threat. Its strongest effect is preventing major power conflict mainly by manipulating the risk of nuclear weapons use; it is ethically complicated. Deterrence should be applied in a disciplined and context-specific manner: deterring actor X from doing Y in scenario Z, using the full range of diplomatic, informational, military, and economic levers at

one's disposal—what the U.S. refers to as the Diplomacy, Information, Military, and Economic (DIME) spectrum and what the U.K. sees as part of "modern deterrence."

(2) Rebuild the transatlantic connection. As Michael Rühle notes, "Due to its large international role, its correspondingly large military, and its sizable and vibrant strategic community, the United States has been at the forefront of deterrence thinking since the advent of the nuclear age. Its unique role as the military protector of many countries in and beyond NATO has given U.S. thinking on deterrence and other security matters enormous weight." Sadly, extended deterrence was not a priority of the Trump administration; indeed, that administration did much to stoke fears of abandonment within NATO circles. Nonetheless, the work of the U.S. strategic community goes on, and it behooves that community to reach out and engage its European counterparts on deterrence matters of mutual concern (see a proposed list below). This will entail listening and learning about each other's deterrence perspectives and priorities. Reinvigorating and expanding transatlantic dialogue from both sides will help insulate the deterrence agenda from the ebb and flow of broader U.S.–Europe relations.

(3) Strive for diversity. As the chapters in this volume attest, there is a diverse array of backgrounds and viewpoints across the deterrence community. That diversity is encouraging. It is also necessary if we are to successfully bridge the generation gap between those who helped construct the deterrence edifice that saw us through the Cold War and those who are newer to the field but will shape it for years to come. Informal and formal mentoring has a role to play here, while recognizing, of course, that insight is a two-way street.

Establish and pursue a focused research agenda

In my view, the following six topics stand out from this volume and the workshop that inspired it as particularly salient. These topics should appeal to a broad range of interests within the security studies community; most, if not all, lend themselves to intra-European and transatlantic collaboration:

(1) Deterrence *without* arms control and disarmament. Ample intellectual energy is being applied in Europe to reinvigorating arms control and disarmament, particularly under the rubric of risk reduction. More analytical attention is needed to prepare publics and policymakers for a period in which deterrence must operate without progress in arms control, a potentially long flattening of the arc between nuclear deterrence and disarmament, to borrow from Łukasz Kulesa.

In this regard, the European deterrence community should provide fresh thinking on how to manage complex nuclear deterrence relationships in the absence of arms control treaties and confidence-building measures. Is arms racing inevitable? How might the major powers self-regulate their nuclear force levels? What insights from the pre-Strategic Arms Limitation Talks (SALT) era are applicable? What role can doctrine play in attenuating arms racing pressures? This seems a natural path by which

European experts could pivot from arms control to focus more on deterrence analysis and rebalance the nuclear debate.

As Anna Péczeli observed, "the strengthening of the deterrence track will require measurable successes in arms control." What if those successes are not forthcoming? How can we ensure that discontent over lack of disarmament progress does not also undermine European public support for deterrence? In this regard, the abolitionist movement has succeeded in exaggerating the risks of inadvertent nuclear use. Such risk is neither zero nor imminent and cataclysmic, and it will take credible, authoritative analysis to demonstrate this. It behooves the European deterrence community to underscore plainly that the real risk of nuclear use is higher in a world in which disarmament has stagnated *and* deterrence has become delegitimized. The issue of nuclear risk naturally lends itself to collaboration with the U.S., U.K., and French nuclear communities.

(2) NATO's deterrence posture: fit for purpose? As Jessica Cox and Joseph Dobbs observe, NATO has declared it is taking steps to "maintain effective deterrence" after the collapse of the Intermediate-Range Nuclear Forces Treaty. What do U.S. and European deterrence analysts make of them? Is there sufficient understanding of what those steps are? More importantly, how effective do we think the measures will be in deterring Russia in a future crisis or conflict? These questions readily lend themselves to intra-European and transatlantic collaboration.

(3) Conventional–nuclear alignment. As Michael Rühle notes, "While Russia is said to have an integrated approach towards conventional and nuclear weapons, NATO's overall defense posture lacks any integration of the nuclear mission into its overall defense posture, which some see as a serious liability." The 2018 *Nuclear Posture Review* makes clear that the integration of nuclear and nonnuclear planning is now a U.S. priority. What about NATO?[475] What are its abilities to continue to function in the event of limited nuclear use? Are we facing another yawning gap between U.S. and European military capabilities? What are the political implications? This issue is an excellent opportunity to expand and enrich the European deterrence community by bringing into it conventional military experts and perspectives.

(4) Adversary profiling. The centrality of understanding adversary interests and intent is a theme raised in the inaugural workshop by multiple participants, as well as in the chapter by Michael Rühle. Russia tops the list for European analysts, but China, North Korea, and Iran can likewise invoke European security interests to varying degrees. How can we ensure that Western defense planning and policymaking benefit from the best insights we can muster on the adversary's deterrence calculus? What are the opportunities for transatlantic and intra-European collaboration?

(5) More self-reliant European deterrence. The debate over a European nuclear deterrent kicked off by German parliamentarian Roderich Kieswetter in 2016 and

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475 For a timely perspective, see Harrison Menke's "Aligning the Nuclear and Conventional Elements of NATO's Deterrence," in: Andrea Gilli (Ed.), *Recalibrating NATO Nuclear Policy*, no. 10 (June 2020). http://www.ndc.nato.int/news/news.php?icode=1446. Accessed January 19, 2021.

sustained recently by French President Macron's offer of a European strategic dialogue has yet to play out. Views as to the feasibility and desirability of a "Eurodeterrent" vary by country and institution in Europe. In contrast, not much attention has been devoted to the matter by the U.S. expert community. Because the issue is symptomatic of turbulence in the transatlantic relationship, it should be addressed by deterrence communities on *both* sides of the Atlantic. One can imagine here a joint U.S.–European assessment that entails historical perspectives as well as fresh thinking from seasoned experts and relative newcomers to the field. In the end, transatlantic consideration of a Eurodeterrent may well renew appreciation for U.S.-extended deterrence in Washington, as well as in European capitals.

(6) Deterrence polling. Throughout Europe, public opinion polling seems to be the preserve of deterrence skeptics and nuclear abolitionists. Polls commissioned by the International Campaign to Abolish Nuclear Weapons (ICAN) and similar groups suffer from bias yet dominate the public discourse. The result is likely exaggerated opposition to nuclear deterrence and support for the nuclear weapons ban treaty. As Michal Onderco points out, there is a clear need for credible and consistent polling on attitudes toward nuclear deterrence in Europe. This should be a priority undertaking of the European strategic studies community.

In sum, there exists renewed interest in nuclear deterrence within European circles, a desire to reinvigorate the transatlantic dialogue on the subject, and no shortage of pressing items on the research agenda. The transatlantic community should build on these efforts through continued engagement, enhanced collaboration, and additional publication efforts.

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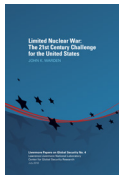*U.S. Extended Deterrence and Japan's Security (2017)*

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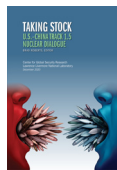
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Patrick Turner
NATO Assistant Secretary General for Defence Policy and Planning

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